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New Sulphite Mill for British Columbia

Frank L. Buckley and Associates Plan to Build Plant At Seal Cove, Prince Rupert, With Capacity of 200 Tons Per Day, to Compete With Swedish Product—Construction Will Probably Commence Within Six Months and Production of Bleached Sulphite Is Anticipated Within Eighteen Months, According to Announcement

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 28, 1932—Frank L. Buckley, who for many years has been interested in logging and saw mill operations in Northern British Columbia, states that certain associates have authorized him to announce their decision to organize with a view to building a bleached sulphite mill at Prince Rupert, B. C., to compete with the Swedish product. The mill is to have a capacity of 200 tons per day.

Mr. Buckley said that his supporters were from New York, Minneapolis and New Orleans. He added that a site had already been selected at Seal Cove. The proposed mill will manufacture high grade sulphite and will use approximately 700,000 feet of logs daily.

"Construction will probably be under way within six months, so that production should be expected in eighteen months, if not sooner," said Mr. Buckley.

Pulp mills already established in British Columbia have been active in recent months, although operating considerably below normal capacity. British Columbia Pulp and Paper Company operates two mills, one at Woodfibre and another at Port Alice.

Disturbances in the Far East have interfered to some extent with the transpacific pulp trade, but the dislocation is not expected to be prolonged.

"Our chief handicap at the present time is the fluctuation in exchange," said Lawrence V. Killam, president of the British Columbia Pulp and Paper Company.

Argument Concluded in Price Bros. Action

Argument has been concluded on both sides in the action taken in the Superior Court in Quebec by Price Bros. & Co., against the Newsprint Institute of Canada for $746,000 and interest, based on an alleged agreement entered into between the various news print companies which created the institute as a distribution and selling agency through which each company would receive the same net price for its produce. In concluding argument both counsel stated that they had but outlined their contentions and that complete arguments would be submitted in writing within thirty days.

Louis St. Laurent, K. C., counsel for Price Bros., in explaining the working of the Institute, said: "The agreement was that each would make periodical reports as to the amount of news print sold and the amount per ton received, and that compensation would be made by cheques for any difference in the average price. If a company received more than the average price, its account would be debited and if it received less its account would be credited." Mr. St. Laurent pleaded that it had been proven that in adjustments Price Bros. were owed $746,000.

Aime Geoffrion, for the defense, held that the contract under which the Newsprint Institute was formed by eighteen companies was not valid; and that by breaking its agreement with the Institute, Price Bros. had lost the right to enter suit against the defendant.

"This contract is illegal," Mr. Geoffrion said, "because it is arbitrary. In the first place," he said, "the central office (of the Institute) did not have control over the individual companies. They reported to it but that did not suffice. To be legal, this agreement would have to be sanctioned by the Legislatures of Ontario and Quebec. The fact that L. A. Taschereau and G. Howard Ferguson sanctioned it was not sufficient."

Illegality of the contract was further proved, Mr. Geoffrion said, "by the fact that the Spruce Falls Paper Company never really became a member of the Institute. The agreement is based on two documents. The first was a contract, signed by officials of all companies, Spruce Falls included, by which it is agreed the signatories will become members of the Institute conditional upon the joining of all other companies. The second document is a formal contract, declaring valid the conditions agreed to in the first paper. This second contract was never signed by Spruce Falls officials and I therefore maintain that the agreement is illegal."

By supplying a Montreal newspaper with news print at reduced rates, Mr. Geoffrion stated "Price Bros. failed to live up to its obligations which were designed to stop competition among paper organizations."

(Continued on page 44)

Demand for Paper Irregular in Philadelphia

While the Fine Paper Market Exhibits Spottiness, the Coarse Paper Section Is More Active Than of Late—Wrapping Paper Situation Continues to Improve—Board and Roofing Manufacturers Speed Output After Long Dilatory Spell

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., March 28, 1932.—For wrapping paper dealers Easter week was more active, but the fine paper trade experienced a spottiness that indicated uncertainty and hesitation among consumers. Mills were slightly more active, with demand among board manufacturers and roofing mills more gratifying after a prolonged dilatory spell of buying. While roofing manufacturers have resumed operations, production is confined to two or three days. Board manufacturers, however, estimate orders sufficient to carry on the present full time schedule for the next few weeks.

The most satisfactory trade factors are the stability of the wrapping paper market and the firmness of the bag situation, after a five year period of chaotic conditions and price disturbances that menaced business of both distributors and jobbers. This steadiness was brought about by the united effort of manufacturers, distributors and jobbers, and the aggressive campaign carried out by the newly formed Philadelphia Paper Jobbers Association. After many years of unsteadiness and useless efforts at organization, the bag and wrapping paper jobbers, or the smaller firms engaged in small lot trading of coarse papers and bags chiefly, have consolidated for mutual welfare, and beneficial results are already noted in the stabilized market in Philadelphia and adjacent territory. Prices are firmer, despite keen competition, and the dullness of business in many industries served by this branch of the paper industry. Despite handicaps of present day paper trading, jobbers are unanimous in forecasting more profitable markets, as a result of the determination of the smaller paper dealers to hold to the plans laid down by the new organization.

Perfection of Paper Jobbers Organization

With the session scheduled for March 30 at the Elks Club, the Philadelphia Paper Jobbers Association plans perfection of its organization and the reports of various committees assigned to such work as framing by-laws, credit interchange, and the matter of contacting distributors and manufacturers on problems affecting the industry. There will be announced plans for a Credit Interchange Bureau, the report of Chairman F. S. Goldman, of the committee to contact distributors on problems of distribution of small lots, and the perfection and reading of by-laws of the association. President Nathan D. Isen will preside.

The Philadelphia Paper Jobbers Association will extend its membership to dealers in paper, bags and twines in other cities and towns throughout the territory in Eastern and Central Pennsylvania, Southern New Jersey, and adjacent sections. There is to be launched a campaign for enrollment of all such firms in the territory, and invitations will be extended to these paper jobbers to attend forthcoming meetings with a view to giving prospective members an insight into the work to be carried on by the organization.

Philadelphia Paper Trade Association to Meet

There will be a combined meeting of the fine and wrapping paper divisions of the Philadelphia Paper Trade Association at the DuFour Restaurant in Fourth street, on April 13, with President William A. Hentz presiding.

Scott Paper Co. Advertising

Large increase in advertising appropriations was attributed to the Scott Paper Company's ability to weather the depression successfully by its president, Thomas B. McCabe, in his address to the Sales Managers' Club of Philadelphia, given at the Bellevue Stratford Hotel last Tuesday. This move in increased advertising, President McCabe said, was an important factor for the success of the firm coupled with the improvement in quality of Scott Tissues, backed by the aggressiveness of sales representatives in promoting volume of sales through intensive drives during the years of the economic pressure and so placing the Scott Paper Company among the few concerns that showed increased business throughout the current depression. He states that the improved quality of Scott Tissues had not only held old business but had considerably promoted new business.

S. Walter, Inc., to Extend Facilities

There is planned considerable improvement in the facilities of the Lehigh Valley Paper House Division of S. Walter, Inc., at Allentown, Pa., in the near future. Among the innovations will be the installation of a spacious loading platform and remodeling of quarters to permit of larger space, modern sales rooms and warehousing facilities to take care of growing business in the Lehigh Valley section.

National Container Co. Expands Quarters

The Philadelphia branch of the National Container Company, opened here over a year ago, has been expanded by addition of another floor in the Potash Bros. Building, located at Swanson street and Oregon avenue. The company now has 70,000 square feet of space in that building devoted to the manufacture of corrugated shipping containers for freight, express and parcel-post shipping purposes. The Philadelphia branch was opened as an expansion of the Long Island headquarters of the National Container Company, and is under direction of A. L. Rosenfeld, vice president in charge of production, and F. R. Mann, vice president. The local plant is devoted to the needs of the Philadelphia and Baltimore territory.

Music in Paper Stock

From the rustle of bales of paper stock coming into the warehouses of John Simmons' Sons, at Marshall and Ranstead streets, there came to the group of workers in the plant the melody of music, mysteriously resounded throughout the unloading and handling of a large incoming shipment of old papers bought by the head of the firm, William L. Simmons, from a central city office building. Upon unpacking the largest bale there was found an old time melodeon, of the Victorian period vintage. With plenty of time on their hands as a result of the depression in the paper stock business, members of the firm and associates in the office are now giving daily organ recitals of old time favorites. Visitors to the offices have been given a rare treat in choral singing by the quartette of trade associates of old time favorites, such as "Barnacle Bill the

Sailor," by William L. Simmons, Jr., of the firm; Col. Charles Carter, of the MacAndrews & Forbes Paper Board Division, who has offices in the Simmons Building; Wilton R. Cole, engaged in the sale of roofing papers, also with offices at the same location; and by Warren Doernbach, representing A. DeRonde & Co., manufacturers of paper chemicals and dyestuffs, another occupant of the Simmons offices, to the accompaniment of the old melodeon, which still retains its tunefulness, despite rough handling. Another interesting find in the bales of paper stock was the *Philadelphia Public Ledger*, dated back to 1854, which was printed on paper made by the mills owned by Colonel Carter's father, Israel Day Carter, known as the Ledger Mills, near Elkton, Md., whose whole production was sold to George W. Child, owner of the *Philadelphia Public Ledger* and later to the Abel interests, publishers of the *Baltimore Sun*. The Ledger Mills were founded by Colonel Carter's grandfather, Robert Carter, in 1811.

Boston Paper Market Fairly Active

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 28, 1932—Wholesale paper merchants received a moderate volume of orders last week. In some cases business has fallen off to a certain extent, and in others it has been "good." The trade, in general, is hopeful, with conditions in the country estimated as a shade better. New lines continue to be offered. The interest in fine papers for direct mail advertising keeps up, with plans for Spring under way. Manufacturers, as well as jobbers, speak hopefully. Dealers in wrapping paper report a fair week. Seasonal business in specialties, such as paper drinking cups, napkins, etc., has been slow, but now that Easter has passed, the trade is looking forward to more activity in these lines. Box board business has been hardly better than fair, as a whole.

Dullness in paper stock persists. Price revisions are practically all downward. In old papers, No. 1 soft white has declined from 1.50 @ 1.75 to 1.50 @ 1.60; solid ledger books from 1.50 @ 1.75 to 1.40 @ 1.65; mixed ledgers from 1.15 @ 1.30 to 1.00 @ 1.15; No. 1 books, heavy, from .65 @ .75 to .60 @ .70, and manila envelope cuttings from 1.85 @ 2.00 to 1.50 @ 1.60.

In bagging, jute carpet threads have been marked down from .75 @ .90 to .40 @ .60; No. 1 scrap burlap from .85 @ .90 to .80 @ .85; wool tares, heavy, from 1.00 to a range of .80 @ .90; new burlap cutting from 1.50 @ 1.75 to .90 @ 1.00; Australian pouches from 2.00 to 1.50; heavy baling bagging from 1.50 @ 1.60 to 1.25 @ 1.30; paper mill bagging from .75 @ .85 to .60 @ .75; and No. 1 burlap from 3.50 to 3.00.

In new domestic rags, O. D. khaki as declined from a range of .04½ @ .05 to .03 @ .03½. In old domestic rags, white No. 1 repacked has been marked down from 4.75 @ 5.25 to 3.00 @ 3.50; white No. 1 miscellaneous from 4.00 to 2.25 @ 2.50; twos and blues from 1.50 to 1.00 @ 1.25; thirds and blues, miscellaneous, from 1.00 @ 1.20 to .70 @ .75; black stockings from 3.25 @ 3.50 to 2.50 @ 2.75. Roofing stock No. 1 has advanced from .53 @ .58 to .58 @ .60, but No. 2 has declined from .48 @ .53 to .48 @ .50.

U. S. Gypsum Starts Bag Plant

GENOA, Ohio, March 21, 1932.—The United States Gypsum Company has erected a new brick building here for the manufacture of paper bags used in the lime industry. The capacity will be a million and a half sacks monthly. There are 34, including 22 women, employed at the plant.

Latex Fiber Industries Formed

F. B. Davis, Jr., president of the United States Rubber Company has announced the formation of the Latex Fiber Industries, Inc., a new company owned jointly by the United States Rubber Company and the J. P. Lewis Company interests of Beaver Falls, N. Y. The J. P. Lewis Company group is one of the largest and most prominent manufacturers of special paper board products.

Officers of the new company are: Harry S. Lewis, president; R. P. Rose, vice-president; Wilson H. Blackwell, treasurer; D. E. Griffith, secretary; Directors: Harry S. Lewis, R. P. Rose and H. W. Waite. Mr. Lewis is president of the J. P. Lewis Company and Mr. Griffith also represents that company. Messers. Blackwell, Rose and Waite are members of the United States Rubber Company organization.

Products now manufactured by the Fiber Products Division of the United States Rubber Company at Cleveland, Ohio and Rock City Falls, N. Y. will be produced by the new company at Beaver Falls, N. Y. in the Lewis Slocum & LeFevre Company, Inc. plant, which has been acquired for that purpose and which will be ready for production by June 1. Meanwhile customers will be served from the Cleveland and Rock City Falls plants of the United States Rubber Company. These products, namely, Insolex and Laflex, used in the shoe industry; Lexide, a base material used by manufacturers of artificial leather goods; and various automotive specialties such as panel and fireproof boards will continue to be marketed through the sales organization of the United States Rubber Company. It is planned to manufacture, also, a line of specialties for general purposes such as cover, tag and sign paper and various industrial paper and paper boards. These products will be marketed by the J. P. Lewis Company through its present selling organization.

Latex Fiber Industries, Inc., has been licensed under many patents pertaining to the use of latex and fibrous materials owned by the United States Rubber Company and is in a position to grant sub-licenses to paper and paper board manufacturers. It is planned to extend development work on many new types of products made from combinations of latex and fibrous materials, particularly in the fields of paper manufacture.

The new company will have offices at 1790 Broadway, New York City and Beaver Falls, N. Y.

New Birkner Adressbuch Out

Published by Birkner & Co., of Bach-Strasse 5, Berlin, Germany, the "Birkner Adressbuch Der Papier-Industrie Europas" is a valuable and useful directory of the paper industry in Europe. The different sections of this large and attractive volume are distinguished by being printed in various colored papers. One of the most valuable features of the address book is a dictionary of terms used in the paper industry, printed in German, English and French.

The directory also contains detailed information of paper, board, cellulose and wood pulp mills in Europe, arranged according to countries, states and towns or cities; lists of paper and board products and their manufacturers; wholesale paper merchants; paper mill agents and representatives; etc. A section is also devoted to the sources of supply for the paper industry, which contains the names of manufacturers of all kinds of paper machines, requirements and resources for the entire paper industry.

Ontario Paper Mills Are Moderately Active

Demand for Various Standard Grades of Paper Fairly Satisfactory—Book and Off-Set Papers Going Forward in Good Volume—Request for Coated Stock Shows Slight Improvement—Bonds and Ledgers Continue Rather Quiet

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 28, 1932.—Sales volume continues light in wholesale paper circles and conditions generally are described as spotty. Taken as a whole, however, paper merchants are getting about as much business as they looked for considering the condition of trade generally and are not complaining, despite decreased profits and smaller volume of sales. Some lines of fine papers are selling well in total of small orders—notably book papers—but there is still a tendency on the part of the paper consumer to buy the cheaper grades. In the case of coarse papers the market is quiet and business is reflected in light volume of retail sales of practically all commodities.

While paper manufacturing operations have been proceeding on a reduced scale since the opening of the present year there is still a satisfactory degree of activity and the fine paper mills are fairly busy. Book and off-set papers are selling well and there has been some little improvement in demand for coated stock. Bonds and ledgers are only in moderate call, although the mills are placing a fairly satisfactory tonnage. Car lots are rather scarce in the coarse paper market and the demand for wrapping paper and bags is decidedly light. Envelope paper manufacturers are none too busy and the call for made-up stock is light, as it is for all paper converting lines. There is keen competition, both domestic and foreign, in tissues, toilets and all light weight papers and while the mills had been quite active earlier in the year there has been a falling off in activity in this department of the paper industry. On the other hand, there is quite a fair call for the products of the glassine, waxing and grease proof machines and these lines of paper appear to be undergoing somewhat of an expansion in use and demand. Bristols, blotting and manilas of Canadian make are enjoying a fair demand.

Paper box manufacturers are still operating on a light basis. Corrugated box concerns are carrying on at about fifty per cent capacity and the set-up plants at about sixty per cent, while the folding box department is averaging around eighty per cent. There has been about a fifteen per cent reduction in the products of the board mills so far this year as compared with the same period last year. Over-expanded, and with formidable internal difficulties to contend with, this branch of the industry is looking with considerable hope to the British market, under the new fiscal conditions obtaining in the Old Country, as an outlet for board products. It is stated that one board concern in Ontario has already made shipments to Great Britain, and that at least one other is closing negotitions in the same quarter.

F. N. Burt Co. in Strong Financial Position

With cash on hand more than twice all current liabilities, a strong liquid position is revealed in the 1931 statement of F. N. Burt Company, Ltd., which includes the manufacture of paper boxes in its activities. Profits for the year failed to cover dividend disbursements after provision for depreciation, patents and Federal taxes. Directors, however, felt justified in maintaining the common stock on an annual dividend basis of $3 a share, President S. J. Moore, of Toronto, states, because of the fact that in the past 22 years the average annual addition to surplus from profits had been $73,550. Profit for the year amounted to $532,161, equivalent after charges to $2.63 a common share. Appropriations were nearly the same as in the previous year. Ratio of current assets to current liabilities as of December 31, 1931, stood at 7.4 to 1 compared with 6.6 to 1 a year ago. The company's statement of profit and loss of surplus shows a balance at the end of the year of $1,146,910, against $1,186,848 at the beginning of the period. The balance sheet reveals a strong cash position, cash being placed at $504,242 against $227,862 a year ago. Receivables are lower at $258,332. Securities and inventories are each slightly lower. The president's statement to the shareholders, which has just been sent out, states that the sales for the year were 11 per cent below 1930 in volume.

Great Lakes Operating Profit

Great Lakes Paper Company has shown an operating profit, before provision for bond interest and depreciation, since July 13, 1931, when it was placed in the hands of the National Trust Company as receiver and manager. This operating result is subject to adjustment with the Minnesota and Ontario Paper Company with respect to proprietary ownership of tonnage, and commission to be allowed to the receivers of the Minnesota & Ontario Company. Adjustment, it is understood, may be favorable to the bond holders. Bond holders have been advised by the Bondholders Protective Committee that there has been no marked change in the operations of the company and that the granting of a receiving order in bankruptcy and the appointment of a custodian in no way prejudices the holders of the first mortgage bonds. The appointment of a custodian or liquidator does not affect the possession and operation of the property covered by the bond mortgage, and the National Trust Company as receiver and manager, will continue to manage the property in the interest of the bond holders.

The company is now being operated at approximately 35 per cent of capacity on tonnage allocated by Minnesota and Ontario Paper Company under an agreement which continues until July 18, 1932.

Notes and Jottings of the Trade

George C. Winlow, sales manager of Alliance Paper Mills, Ltd., Toronto, has left on a business trip to Winnipeg and other centers in the Canadian West.

Construction of an $8,000 warehouse is under way at the plant of Anglo-Canadian Pulp and Paper Company, Ltd., at Limoilou, Que. It will be 100 feet square and one story high, with concrete foundation, frame superstructure, faced with sheet metal, hot water heating, etc.

Demand from the domestic market is stated to be keeping the plant of the Westminster Paper Company, New Westminster, B. C., working on full time, though export business is quiet. In the past the company has experienced a period of two or three weeks' slack time at this period of the year, but with the exception of three days curtailment on account of mechanical troubles, the plant has been operating at capacity without a shut-down.

Chicago Paper Market Comparatively Quiet

While Demand for Standard Grades of Fine Paper Including Writings, Bonds and Ledgers, Shows Some Improvement, Ground Wood and News Print Papers Continue Listless—Kraft Situation More Stable, With Prices Holding to Schedule

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 28, 1932—The customary Chicago spring blizzard came during the past week, putting a crimp in retail sales and, in general, slowing up the arrival of Spring buying. The early Easter season is also having an effect on over-the-counter proceedings. Reports from various sources of information in the Chicago paper market indicate, however, that the finer grades of paper have felt some betterment and there are instances of where fine paper mills are slightly speeding up operations to take care of a heavier demand. Ledgers and writings and bonds of various descriptions have felt this improvement, according to local statements. The betterment has not extended into the news print and ground wood fields. The news print demand is continuously being crippled by apathetic advertising programs which are not of sufficient universality to cause an increase in advertising lineage. Ground woods, too, are suffering from dullness, and the resultant weak market.

In the Chicago kraft market, manufacturers prices are reported to be holding well and kraft jobbers here are also said to be meeting with some success in their combined efforts to improve the market and contribute to the stabilization. The bag market is also reported steady. Growing popularity of well designed containers used in the field of food distribution is giving the container and board market some basis for a hope of getting out of over production burdens. Book and cover papers are reported to be dull to the point of softness as general business uses are being curtailed. The waste paper market shows improvement as to tone but is reported quiet.

Salesmen's Association Activities

Taylor Ward, sales representative of the Cherry River Paper Company, 111 West Washington street, Chicago, is the latest acquisition to the membership roster of the Middle West Division of the Salesmen's Association of the Paper Industry, according to word from Jim Coy, Sr., demon membership committee chairman of that group. Further announcements from the association indicate that the golf tournament season may get under way in April, a lot depending upon whether or not someone can be induced to take the chairmanship of the golf committe in the very near future. We've never heard of a chairman repeating and—there must be a reason. In the mean time the regular Monday sessions at the Hamilton Club are rapidly becoming free-for-all clinics at which important problems confronting the paper industry and sales representatives are thoroughly discussed.

New Uses for Containers

A few remarks by L. W. Waters, vice president in charge of research of the General Foods Corporation indicate the growing possibility of near improvement in the container market through new uses. Quick frozen foods, says Mr. Waters, include meats, poultry, sea foods, vegetables and fruits packed in small consumer cartons. At the quick-freezing plant the foods are stored in cold rooms and then shipped to distributing plants in insulated fiber-board containers holding several dozen of the small consumer cartons. "By using this type of container," says Mr. Waters, "the products can be shipped to points up to twenty-hour distant without refrigeration." Mr. Waters calls attention to the fact that frozen foods are popular because "buyers can get standard quality in perishable foods, made possible because the packaged products bear the trade mark or brand of the packer; that women are particularly impressed with the sanitary appeal of quick-frozen foods in their neat cardboard cartons." Scores of grocers in New England in the last few months have developed profitable meat trade as simply as they develop coffee sales or sales of baking powder, says Mr. Waters, because of the quick-frozen principle. The tremendous possibilities for development of the paper board industry, with particular reference to the container group, in the growing popularity of quick-frozen foods are pointed out.

Chicago Paper Association Meets

The Tuesday, March 22, meeting of the Chicago Paper Association held at the Bismark Hotel was marked by the absence of a surprising number of the old "stand-bys" who are at present sojourning in the sunny South. Included in this list, all of whom are expected back around the first of April, are Joe Murnane, Murnane Paper Company; Frank Peck, Hanchett Paper Company; Louis Levin, Levin Bros.; Sam Inlander, Inlander-Steindler Paper Company; Howard Hollis, of Hollis & Duncan, and Leo S. Altholz, of the Inlander-Steindler Paper Company. Included in this list are the president, chairman of the board, and other dignitaries. As a result of their absence no direct action was taken on setting the date of the April guest dinner. The meeting, however, was reported to be of genuine value, as another step in the efforts of the association to give the element of stabilization to the bag market. The kraft market is showing gratifying firmness and association members are trying to arrive at some mutual understanding of the bag situation in the same manner. It should be added that M. A. McNulty, chairman of the public relations committee of the association, was also on the absent list, due to illness.

Southeastern Division To Meet

The Southeastern Division of the American Pulp and Paper Mill Superintendents Association has issued the following notice:—

"Due to the present economic condition of the paper industry, the Southeastern Division will not have its usual Spring Meeting lasting two days but have decided to have a "get-together" meeting for at least one afternoon and evening. We are planning to have this meeting on Saturday, April 30, at one of the hotels in Richmond and expect a number of members from Virginia to attend. We hope as many out of state members and friends as possible will arrange to meet with us.

Information can be had by writing to B. K. Steadman in care of Standard Paper Manufacturing Company, Richmond, Va. As plans progress, announcements will be made."

Marathon Paper Mills Speeding Production

Main Plant At Rothschild Has Been Operating At Nearly Full Capacity During Last Six Months, With Force of 535 Men—Converting Units Add 142 Additional Employees, Including 65 At Menasha, 45 At Ashland and 32 At Wausau

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 28, 1932—Since January 1, three plants of the Marathon Paper Mills Company, Rothschild, Wis., have added 142 men, according to a report issued by D. C. Everest, vice president and general manager. The main mill at Rothschild has been operating nearly 100 per cent during the last six months, with a force of 535 men.

With an increase in seasonal demand, it is possible that more men will be added within the next sixty days at the converting units at Ashland, Wausau and Menasha, Wis. Of the 142 additional employees, 45 were added at Ashland, 32 at Wausau and 65 at Menasha.

Allis-Chalmers Position Improved

Allis-Chalmers Manufacturing Company, Milwaukee, one of the largest machinery plants in the world, improved its position during 1931 so its net current assets stand at a ratio of about 7 to 1, or $32,338,000 to $4,308,000. This compares with $34,180,000 to $5,589,000 the previous year. Net income for 1931 was $1,256,431 for the year 1931 as compared with $3,604,609 in 1930. The company had unfilled orders at the end of the year totalling $7,889,333. Total assets are now $75,369,000 as against $74,645,000 the year before.

"Our properties are in good condition, our finances are liquid to a notable degree and the company is in a favorable position to take prompt advantage of a revival in business," states Otto H. Falk, president. Important improvements have been made in several divisions, including the electrical, hydraulic, pumping engine, turbo-blower, steam turbine and milling machine sections. Several large concerns were merged with Allis-Chalmers during the last year.

Consolidated Dam Improvement Approved

Approval has been given the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., by the Wisconsin Public Service commission to raise and enlarge its dam across the Wisconsin River at Wisconsin Rapids. The present elevation, it is stipulated, must not materially obstruct existing navigation or violate any other public rights. According to Stanton Mead, general manager of the company, the dam was enlarged and raised several years ago and the application for maintaining the increase was subsequently made.

Syl-Mac Operations Started

Operations have been started by the Syl-Mac Products Company, Merrill, Wis., for the water-proofing of paper by a special process. The plant will turn out about 40,000 square feet a day. Orders are already coming in satisfactory volume, according to S. H. Killishek, organizer of the company. One furniture company is trying the material as covering for chairs and table tops.

The company is now perfecting washable drapes, said to be as attractive and durable as cloth drapes. Crepe paper from the Northern Paper Mills, Green Bay, Wis., and the Tuttle Press, Appleton, Wis., is being used. The company also expects to produce another product of crepe paper to serve as a covering for cement bags so as to protect them from moisture. Linings for barrels will also be manufactured. Shelf and floor coverings are among the original products planned by the company.

Kimberly-Clark Report

Although the earnings of the Kimberly-Clark Corporation, Neenah, Wis., for the year 1931 were about half those of the previous year, the current position has been materially improved, aided in part by the sale of an additional $3,500,000 of first mortgage bonds. Current assets as of December 31 were $8,960,000 against liabilities of $1,739,000, or a ratio of approximately 5 to 1. The ratio was about 2 to 1 in 1930. Funded debt increased from $5,750,000 in 1930 to $8,635,000 last year.

Net sales in 1931 were $18,136,539 as compared to $21,771,187 in 1930. Cost of sales last year was $14,513,813 and gross profit was $3,662,776, as compared to $4,876,302 the previous year. Net income last year was $1,726,430 and in 1930 it was $3,093,271. In 1931 the common stock earned $2.33 a share as compared to $4.98 in 1930.

Reforestation Conference Arranged

Paper mill owners have been invited to a conference called at Milwaukee, Wis., March 29 and 30 by E. W. Tinker, district government forester for Wisconsin, Minnesota and Michigan. Their views will be sought along with those of large timber land owners, civic groups and others as to whether they will carry their lands, paying taxes on them although they receive no immediate returns until forests can be developed. If the large owners are willing to keep their lands, he believes the small owners will follow suit. The effect of foreign competition on wood using industries and deferred taxes, as an incentive to hold lands, will also be discussed. There are now 5,000,000 acres of tax delinquent lands in Wisconsin, Mr. Tinker says.

With the addition of 91,600 acres in Douglas county, 49,663 acres in Rusk county and 30,234 in Burnett county, Wisconsin now has entered under its forest crop law a total of 750,894 acres. Counties have taken over tax delinquent lands totalling 460,521 acres and are setting them aside for reforestation. Privately owned acreage totals 300,375 acres, of which a large portion is forests maintained by paper mills. All of these lands are exempt from property taxes until the timber is cut.

News of the Industry

Navigation on the lower Fox River will open April 15, according to government announcement. The Fox River Navigation Company's fleet of boats owned co-operatively by the paper mills, has been put into operating condition and will resume shipment of coal to mills from the docks at Green Bay, Wis. soon.

Charles H. Kelly, employed by the Thilmany Pulp and Paper Company, for more than 40 years, died last week at his home at Appleton, Wis. He retired about a year ago. Mr. Kelly was employed with the Kaukauna mills until 1899, when he was transferred to a new branch mill at Appleton as superintendent.

Merton McGee, employed by the Dells Paper and Pulp Company, Eau Claire, Wis., was killed recently when crushed by a coal cave-in. He was a fireman for the mill.

Waste Hemlock Bark Utilization

The study being conducted by the Bureau of Chemistry and Soils, United States Department of Agriculture, to develop a tanning extract from the waste hemlock bark in the northwestern Pacific Coast region is about to enter its second phase.

Arrangements have been made with several timber owners in the State of Washington to furnish 20-ton lots of properly cured hemlock bark, which will be used in making yield tests on a commercial scale at an extract plant in northern California. Both liquid and solid hemlock bark extracts will be produced in large lots at this plant. The products will be shipped via the Panama Canal to the east where the liquid extract will be further tested and processed by several available commercial methods for producing dry powdered extracts.

The third phase of this investigation will consist of actual tanning tests with the liquid, solid, and powdered extracts obtained from the bark to determine their value and adaptability for the manufacture of both light and heavy leather.

Already valuable data have been accumulated relative to the quantity of bark available and factors influencing its utilization. At the completion of this survey and study all the facts and findings dealing with the economic and technical phases of the project, and with its commercial feasibility will be published.

The successful utilization of this enormous potential supply of domestic vegetable tanning material would not only convert what is now an economic waste into a new source of wealth, but also would help materially to place our tanning industry in an independent position and enable us to develop a valuable export trade. These facts are emphasized when it is recognized that the catchecal tannin in hemlock is held in such high regard by tanners for the making of both light and heavy leathers that they continue to use such supplies as are now available at a cost per unit of tannin much in excess of that for many other available materials.

C. C. Smoot, who is in immediate charge of this work, will leave for the west as soon as the peeling season opens on the Pacific Coast. He will be located with headquarters at Portland, Ore., and will personally supervise all stages of this experimental work from the peeling and curing of the bark to the use of the extract in the production of leather.

Montague Mill Shut Down

[FROM OUR REGULAR CORRESPONDENT]

TURNERS FALLS, Mass., March 29, 1932—The Montague mill of the International Paper Company closed down Sunday for an indefinite period throwing 180 hands out of work and causing a loss to the town's business interests of the $5,000 weekly payroll. The mill was built in the early '70's and made newsprint paper for many years. About 20 years ago the product was switched to cover and catalogue specialties. Up to 1898 the mill was run by local and New York capital the mill being bought that year by the International people, and has been operated as a part of their system.

Lack of business is assigned for the shutdown. As the corporation has spent thousands of dollars in replacing old machinery and in electrically equipping the machines hope is held out that it will reopen when industrial conditions are better. The mill has three Fourdriniers with trimmed sheet maximum widths of 76, 80, and 109½ inches.

Boston Paper Trade Happenings

BOSTON, Mass., March 28, 1932—Sidney L. Willson, president of the American Writing Paper Company, Inc., is to speak at the meeting of the New England Paper Merchants Association at the Harvard Club of Boston Thursday evening.

The March number of "How," published by Tileston & Hollingsworth Company, and edited by A. V. Howland, notes the barnstorming with the 1932 calendar in the various New England cities and that Laurance Siegfried gave a talk on the calendar in Toronto. A meeting is to be held in April before the Craftsmen in New York City. Analyses of the January, February and March sheets of the calendar are printed in the issue. Attached to the copy are samples of Tiho Bond in white, blue, salmon, canary, pink, green, buff and golden rod. This paper, a sulphite bond, is one of the lines which the company has been improving. The paper, which has an egg shell finish, is designed for letter heads, interdepartmental correspondence, inexpensive stationery and a diversity of uses. The March number is printed on Milton Text, wove, white, with Milton Cover, yellow.

The Tileston & Hollingsworth Company has announced the appointment of Quincy P. Emery, Inc., as direct representative in New York City and vicinity for "Papers of Old-Fashioned Quality."

A large paper storehouse of the Pejepscot Paper Company, at Topsham, Me., was ruined by fire Thursday, causing a loss estimated at more than $10,000.

At a recent meeting at the office of the Andrews Paper Company, in regard to products of the Gilbert Paper Company, of Menasha, Wis., Frank J. Schneller, vice-president and general manager, and Roger Fuller, Eastern sales representative, with headquarters in New York City, were present, and gave highly interesting talks. Frank H. Merrill, president of the Andrews Paper Company, presided. Both Mr. Schneller and Mr. Fuller were in town all day, calling on the trade in the interest of Gilbert papers.

Mr. Schneller, who gave a talk of two hours and a half, is national director of marksmanship of the American Legion. The same evening he visited Cambridge, (Mass.) Post No. 27, of the American Legion to present that Post with the Paul V. McNutt Trophy, for marksmanship, for 1932, which was won in competition with the entire country.

Henry L. Goodman and his associate, Robert A. Ford, were in Springfield and Holyoke Wednesday, calling at the mills they represent.

To Settle Swedish Wage Dispute

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 30, 1932.—The Swedish Mediation Commission recently presented a new proposal in settlement of the wage dispute between workers and their employers in the wood pulp and paper industries according to a report to the Department of Commerce from Trade Commissioner Dahl, Stockholm. The new proposal calls for a reduction in rates of 4 and 7 per cent.

Norwegian Pulp Production

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 30, 1932.—Wood pulp production by Norwegian mills during January aggregated 25,094 metric tons of chemical pulp and 36,188 tons of mechanical pulp, the former representing an increase of 1,009 tons and the latter a decrease of 10,849 tons compared with the corresponding month of last year.

New York Trade Jottings

John Stadler, the well known paper mill consulting engineer, of Montreal, Que., and his wife, are in New York this week, staying at the Canadian Club.

* * *

Mayflower Paper Corporation has been incorporated under the laws of New York State, with a capital stock of 200 shares common. The Albany Service Company, of 299 Broadway, New York were the attorneys.

* * *

Bush Paper Company, of Brooklyn, N. Y., has been chartered under the laws of the State of New York, with a capital stock of $5,000. The Albany Service Company, of 299 Broadway, New York, were the attorneys.

* * *

Mrs. R. S. Kellogg, wife of Royal S. Kellogg, secretary of the News Print Service Bureau, is displaying a landscape, entitled, "Broadway at 196th street," at the Spring Exhibit of the National Academy of Design, 215 West 57th street, of which she is a former medalist.

* * *

The usual weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry was held at Allerton House, New York, the old Fraternities Club Building, last Monday. There was a spirited round table discussion of prevailing business conditions in the industry, most of those present taking part.

* * *

The Cunard Steam Ship Company, Ltd., have just issued a useful booklet, entitled "Foreign Government Representatives in New York City," which contains the names and addresses of the various consuls and representatives of foreign governments and also their telephone numbers. Copies of the booklet will be sent free upon application to C. W. Kenick, general freight manager, 25 Broadway, New York.

* * *

The members of the board of directors and chairmen of the various divisions of the National Association of Waste Paper Material Dealers, Inc., who have been associated with President Carlton Overton, of Castle & Overton, Inc., during his term of office presented him with a beautifully bound set of the works of Robert Louis Stevenson and Rudyard Kipling on the occasion of the Board meeting on Tuesday evening, March 15. The presentation on behalf of the Board was made by Egmont L. Frankel, who expressed in fitting terms the Board's appreciation of Mr. Overton's work. In responding, Mr. Overton thanked the Board and stated that even though he would not be in active office, he would still have the interests of the association at heart and the Board and members could feel assured that they would always have his fullest co-operation. He stated that the gift itself was particularly fitting in that the two auhors seleced were his favories and that the books would find a prominent place in his library.

* * *

An exceptionally interesting and well attended meeting of the Cotton Rag Division of the National Association of Waste Material Dealers, Inc., was held at the Hotel Astor, New York, on Wednesday morning March 16, with David Charak presiding. An interesting paper was read by Russell S. Madden, vice president of the American Writing Paper Company, who took as his subject, "The Importance of Cotton Rags as a Raw Material for Manufacturing Paper." The balance of the meeting was taken up in a discussion of the contract in use by the felt manufacturers or more particularly the standard form of contract approved by the Felt Manufacturers Association. At the close of the meeting a vote was passed to the effect that the Cotton Rag Division sttod ready at any time to appoint a committee to meet with a committee from the Felt Manufacturers Association to discuss the various problems which had been under consideration at the meeting, following which action Joseph Schapiro of Baltimore was elected chairman of the Cotton Rag Division for the ensuing year.

Amendment to Pulp Tariff

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 28, 1932—An amendment affecting pulp has been introduced in the Upper House of Congress by Senator Jones, of Washington to the tariff bill which is now pending in that body and on which action will be taken in a few days.

The Jones amendment, as introduced, provides for the addition of a section to the tariff bill now pending as follows;

"Section 5 (a) The Tariff Act of 1930 is amended by adding after paragraph 412 the following new paragraph;

"Par. 413. Mechanically ground wood pulp, one sixth of 1 cent per pound, dry weight; chemical wood pulp, unbleached, one third of 1 cent per pound, dry weight; bleached, one half of 1 cent per pound, dry weight.

(b) Paragraph 1716 of the Tariff Act of 1930 is hereby repealed.

(c) This section shall take effect on the day following the date of its enactment."

The general opinion about the pending tariff bill which has passed the House is that it will either die in conference or it will be passed by Congress and vetoed by the President. There are not enough votes to pass the bill over Presidential veto.

Allen Curtis Resigns

Allen Curtis has resigned from the board of directors of the International Paper Company. F. Eberstadt, of F. Eberstadt & Co., Inc., 39 Broadway, New York, has been elected to fill the vacancy on the board. The resignation of Mr. Curtis terminates an active connection between his family and the company which had existed since the formation of the International.

Mr. Curtis had been associated with the International Paper Company for 32 years. His last active position was that of vice president. He had charge of the manufacturing operations of the company for eighteen years. From 1928 to 1930 he was in charge of construction and built the Dalhousie mill of the company, but resigned from that position on March 1, 1930. He has been a member of the board of directors for the past twelve years, and was elected vice president in 1922 and first vice president in 1926.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 30, 1932.—The Government Printing Office has received the following bids for 9,940 pounds of white natural tint passport paper: R. P. Andrews Paper Company, at 23.5 cents per pound; Barton, Duer & Koch Paper Company, 21 cents; Whitaker Paper Company, 13.5 cents and 16 cents; Hawthorne Paper Company, 12.59 cents; Aetna Paper Company, 11.97 cents; Whiting Paper Company, 24.75 cents; and Perkins-Goodwin Company, 18.5 cents.

POWER PLANT SECTION

REDUCING POWER COSTS THROUGH UNIT TREATMENT

Conducted by **Reginald Trautschold Consulting Engineer**

Steam Turbines Effect Marked Economies*

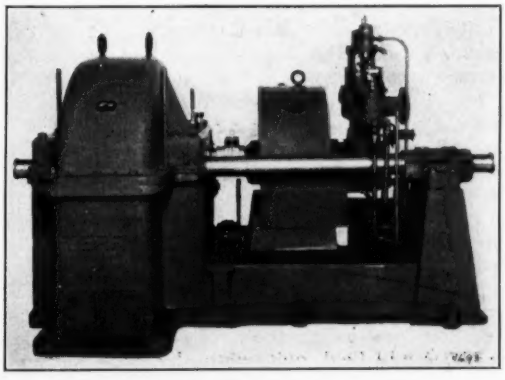
Capitalizing On Depression

One of the country's leading manufacturers of steam turbines stated, within the past few weeks: "We are pleased to report that, in spite of the depression, paper mills in a great many cases have found it profitable to install our machines. The strenuous efforts which are being made to reduce production costs have resulted in the installation of a number .... (steam) turbine paper machine drives."

In an industry where there is little or no time for undertaking much in the way of major plant improvements when times are good, where the machines run day and night, virtually every day of the year, the mills that have taken advantage of the curtailment in demand for mill products to renovate and modernize their power equipment have actually capitalized upon the depression. The opportunities of so doing, of course, have been most marked, although not always foreseen by the mills.

At one eastern paper mill engaged in the manufacture of tissue, for example, where oil in the exhaust of the reciprocating engines had been more or less troublesome, necessitating a change, a single 50-horsepower, steam turbine, paper machine drive was installed on a trial basis. A motor drive, the alternative, it was felt would not be a wise selection, for the reason that an entirely satisfactory supply of 200-pound steam was available and if a motor was used, the drop in steam pressure from 200 to about 5 pounds would be wasted.

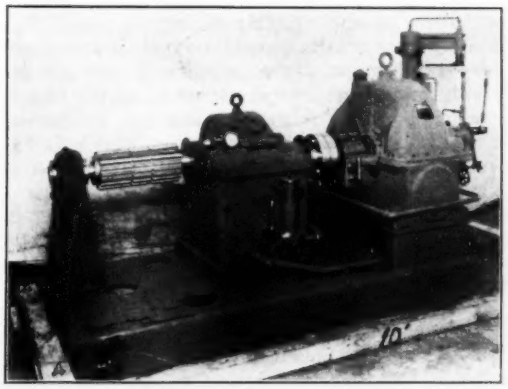
* For previous discussions on steam turbines see PAPER TRADE JOURNAL, Sept. 29, 1927; Mar. 22, 1928; Sept. 20, 1928, May 23, 1929 and July 24, 1930.



Courtesy: The Terry Steam Turbine Co.

FIG. 1

Typical 600 h.p. steam turbine drive unit capable of operating over a 10 to 1 speed range with double ended low speed shaft for connection in middle of variable speed line.



Courtesy: The Terry Steam Turbine Co.

FIG. 2

Recent 200 h.p. paper machine turbine drive furnished for a mill in Ohio, employing a chain drive connection.

The results secured with this first 50-horsepower turbine proved eminently satisfactory in every way. So much so, in fact, that now two additional steam turbine paper machine drive units have been placed in service in this mill. Higher quality tissue is now produced and power costs have been materially lowered.

Another of these cases where the economy of modern steam turbine paper machine drives was established to the satisfaction of the mill management in this progressive manner occurred at the plant of a manufacturer of wrapping paper and similar products, at an establishment where two paper machines are employed, both of which were until quite recently driven by reciprocating steam engines. Here, also, changing over to turbine drives has proved decidedly profitable.

Early in 1930, the two paper machines were thoroughly overhauled and rebuilt and, as one of the driving steam engines was felt to be no longer suitable and considered antiquated, the mill management decided to replace it with a modern steam turbine unit. A 75-horsepower, non-condensing, steam turbine was installed, consequently, with a speed range of from 40 to 200 feet per minute, operating on steam at 90-pound pressure and against a back pressure of 15 pounds, for the smaller of the two paper machines. At that time, the larger steam engine was deemed satisfactory for the operation of the larger of the

rebuilt paper machines and productive mill operation was resumed.

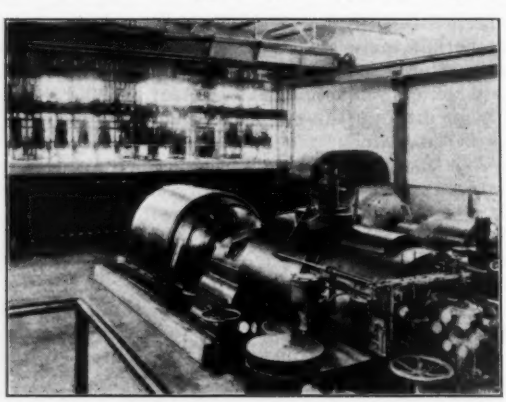
With the two paper machines in service, one driven by a steam turbine and the other retaining its old reciprocating steam engine drive, an excellent opportunity was afforded to compare the relative merits of the two power unit drive systems. A brief period sufficed to demonstrate the unquestioned superiority of the steam turbine drive, for the smaller machine at once produced paper at a considerably lower unit cost. The discrepancy in operating costs was so marked, in fact, that in December of the same year the second paper machine was equipped with a 200-horsepower steam turbine drive.

A third instance where the installation of a modern steam turbine paper machine drive was literally forced upon a mill is in the case of a manufacturer of paper specialties. The production costs on one of the machines in use seemed unduly high and it was felt imperative to increase the machine speed. The paper machine builder, therefore, was consulted and it was found that only relatively minor changes would have to be made to permit the operation of the machine at higher speeds. When the changes were consummated, however, it was discovered that the reciprocating engine could not carry the heavier load, both on account of the low speed of the engine and the greater power requirements imposed by higher machine speed operation.

A more modern and more powerful drive had to be installed to gain the economies promised by higher speed operation and, after a thorough investigation of suitable power units, a steam turbine rated at 325 horsepower, operating on 165-pound steam, was selected. This inherently flexible unit is equipped with remote speed control, as well as with a remote emergency tripping device, refinements that assist in the control of production costs, and is suitable for operation against back pressures of from 10 to 40 pounds. It operates over a 10 to 1 speed range, enabling the machine to be operated, not only at the desired higher speed, but at low speeds as well when some of the heavier stocks are run. After being in operation about nine months, the new turbine drive was reported to be satisfactory in all respects, which means that the machine is no longer burdened with excessive production costs.

Types of Steam Turbines Employed

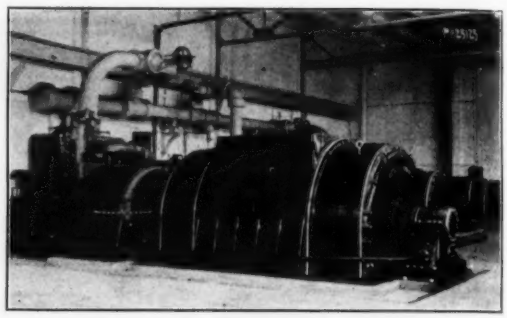
Countless other examples could be cited pertaining to turbine installations supplanting antiquated reciprocating



Courtesy: Allis-Chalmers Mfg. Co.

FIG. 3

4,000-kilowatt bleeder condensing turbine and 1,500-kilowatt straight condensing steam turbo-alternator unit installed in the Grand Rapids, Minn., plant of the Blandin Paper Co.



Courtesy: Westinghouse Electric & Manufacturing Co.

FIG. 4

6,000-kilowatt condensing, single bleeder, steam turbine installed at the Fraser Paper Co., Madawaska, Me., bleeding at 110 pounds gauge pressure.

engines in paper machine drives with decided benefit to the mill, but a brief survey of the types of steam turbines found suitable for pulp and paper mill requirements is, doubtless, of greater general interest, for the use of steam turbines by the paper making industry is very far from being limited to substitutions for obsolete reciprocating engines in paper machine drive service. The use of these units includes the very many applications to pumps, fans, other auxiliary equipment and also the very extensive employment of steam turbines in driving electric generators that in turn supply power for motor driven paper machines.

The types of steam turbines most commonly employed in pulp and paper mill establishments are of the condensing non-condensing and bleeder varieties, the latter of both non-condensing and condensing types; mixed pressure turbines being used relatively seldom, as there is rarely a surplus of low pressure steam for their operation. The present tendency is to use bleeder type turbines, as units of this type can be obtained in capacities sufficiently large to care for the entire power demand of the plant and still be bled at suitable pressures to supply all the process and heating demands of the mill. The efficiency of a modern, bleeder type, condensing steam turbine unit, incidentally, closely approaches that of a straight condensing turbine unit, when operated straight condensing, and as both power and steam demands can thus be supplied frequently there is often a material building cost saving to be effected by the use of a single unit in place of several units.

In mill plants where a suitable balance between process steam and power demands can be maintained, non-condensing steam turbo-generator units are, as a general rule, well suited, since the exhaust steam can be used in the process operations and for heating, and no condensing equipment is required. Non-condensing steam turbine units, controlled by an exhaust pressure or temperature regulator, may also be used to advantage in plants where the power required in excess of that corresponding to the low pressure steam demands of the mill can be advisably purchased from some available utility power system. In such cases, the non-condensing turbine unit may be operated in parallel with the purchased power supply to carry the proportion of the mill load determined by the exhaust pressure regulator.

Steam turbine applications such as these, i.e., installations of non-condensing steam turbine units, predominate in the paper mill field, quite naturally, with the majority of the units of the bleeder type, but the use of condensing steam turbines has become very much more general than is customarily realized. One of the leaders among steam turbine manufacturers has, during the past five years, sup-

TABLE I—STRAIGHT CONDENSING STEAM TURBINES INSTALLED 1927-1932

Capacity in Kw.	Steam Pressure	Steam Temperature	Vacuum Inches Hg.
1,000	340 lbs.	175 deg. superh't	28 inches
1,500	165	0	27
2,000	190	0	28.5
2,500	425	100	28
2,500	140	100	28
7,500	400	200	27.5

Westinghouse Electric & Mfg. Co.

TABLE II—CONDENSING STEAM TURBINES, SINGLE BLEEDERS INSTALLED 1927-1932

Capacity in Kw.	Steam Pressure	Superheat deg. Fah.	Bleeder Pressure lbs. gauge	Vacuum Inches Hg.
500	150 lbs.	0	...	28
1,000	200	75	10 [1]	28.5
1,000	200	100	30	28
1,000	150	100	15 to 20	28
1,500	385	100	125	28
2,000	145	85	30 & 10 [2]	28
3,500	235	100	30	28
7,500	240	125	11	29

[1] Provides for steam admission as well as extraction.
[2] One point for automatic and the other for non-automatic bleeding.
Westinghouse Electric & Mfg. Co.

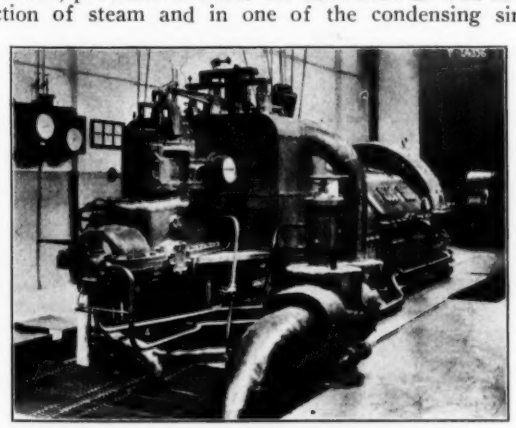
TABLE III—CONDENSING STEAM TURBINES, DOUBLE BLEEDERS INSTALLED 1927-1932

Capacity in Kw.	Steam Pressure	Superheat deg. Fah.	Bleeder Pressures lbs. gauge	Vacuum Inches Hg.
4,000	385 lbs.	113	125—20	28.5
5,000	390	260	150—30	28.5
5,000	450	192	180—65	28

Westinghouse Electric & Mfg. Co.

plied forty-three mills with a total of some seventy turbine units, mostly of the larger sizes, the majority of which are used to drive generators that supply power for motor driven paper machines and other equipment. Of these larger units, ranging in rated capacity from 500 to 7,500 kilowatts, seventeen are of the condensing type and twenty-seven of the non-condensing variety. In individual units, the non-condensing turbines outnumber the condensing units by approximately 60 per cent and outrank them in aggregate capacity by about 80 per cent but in view of the situation that existed less than even a decade ago this is a surprisingly strong showing for a variety of power unit few imagined would ever be in demand for paper mill service or in any process industry making use of large quantities of low pressure steam.

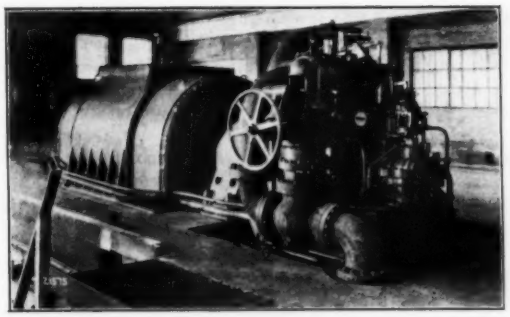
Among the seventeen condensing turbines, six, aggregating 17,000 kilowatts in capacity, are of the straight condensing type, eight are bled at a single stage and only three of the larger units are automatic double bleeders. Among the twenty-seven non-condensing turbines, sixteen are non-bleeding units and only eleven permit the extraction of steam for process operation requirements. In several instances, in both condensing and non-condensing unit constructions, provision is made for admission as well as extraction of steam and in one of the condensing single



Courtesy: Westinghouse Electric & Manufacturing Co.

FIG. 5

1,500-kilowatt, non-condensing, steam turbine installed at the plant of the Waldorf Paper Products Co., at St. Paul, Minn.



Courtesy: Westinghouse Electric & Manufacturing Co.

FIG. 6

7,500-kilowatt, non-condensing steam turbine installed at the plant of the Anglo-Canadian Fulp & Paper Co., Quebec, P. Q., bleeding at 110 pounds gauge pressure.

bleeders provisions are made for automatic steam extraction at one pressure and for non-automatic extraction at another pressure.

These statistics have to do with the activity of only one turbine manufacturer, it is true, but they are, nevertheless, quite illuminating, for they are in all probability a very fair picture of recent trends and developments. They are of particular interest, also, as the period during which the installations were made covers both years of stimulated business activity and years of serious business depression. Prior to the autumn of 1929, business conditions were not such as to impose the need for any particular hesitancy in departing from previous established methods in operating practices, if an innovation gave reasonable promise of being justified, but conditions during the past twenty or thirty months have certainly been such as commanded the greatest care in all expenditures for equipment and discouraged investments of questionable return or of advance along any but sound engineering and economic lines. Yet it was in these critical years, when at first mills sought for ways of reducing operating costs while in active production and then simply had to cut the costs of doing business, that the condensing steam turbines have been introduced to some of the most progressive paper mills of this country and Canada and, as seen, adopted by them.

Outstanding as has been this movement toward the

TABLE IV—NON-CONDENSING STEAM TURBINES, NON-BLEEDERS INSTALLED 1927-1932

Capacity in Kw.	Steam Pressure	Superheat deg. Fah.	Back Pressure lbs. gauge
800	180 lbs.	0	35
900	175	100	5 to 30
500	350	172	125
750	350	172	125
1,000	285	200	155
1,000	375	200	35
1,000	150	100	15
1,500	400	80	8 to 20
1,500	400	150	120
1,500	425	100	135
1,500	375	200	35
1,500	600	200	60
2,000	370	160	20
3,000	375	200	35
3,000	600	200	60
4,000	375	200	35

Westinghouse Electric & Mfg. Co.

TABLE V—NON-CONDENSING BLEEDER TURBINES INSTALLED 1927-1932

Capacity in Kw.	Steam Pressure	Superheat deg. Fah.	Bleeder Press. lbs. gauge	Back Press. lbs. gauge
1,000	340 lbs.	175	110	30
1,000	340	175	110	30
2,500	400	200	125	30
4,000	400	260	175	25
4,000	400	260	130	25
4,000	400	210	150	35
4,500	550	220	180	20
5,000	400	200	125 [1]	30
5,000	400	200	125 [1]	30
6,000	550	225	180	20
7,500	375	100	110 [1]	25

[1] Provides for steam admission as well as for steam extraction.
Westinghouse Electric & Mfg. Co.

more general use of condensing steam turbines, there has also been marked advance of sound and profitable character in applications of non-condensing turbine equipment. These latter units possess the very decided advantage of requiring no condensing equipment, which in itself represents a considerable saving, so in presenting some typical operating results and pertinent details concerning some of the more recent steam turbine installations in the pulp and paper mill field it will be well to draw attention to applications of both non-condensing and condensing steam turbine units.

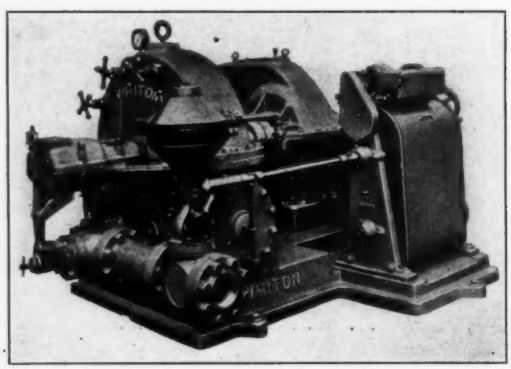
80 Per Cent Greater Output

In 1928, the Inland Paper Board Company, Montville, Conn., found it necessary to expand and increase the capacity of its plant to meet production demands and a survey of the facilities as they then existed was made by a prominent consulting engineer, an expert in the field of paper mill construction and operation. As a result, additional boiler capacity was installed and the power plant renovated. This accomplished and it was found that the existing engine drive for the variable speed end of the board machine was inadequate, due in no small measure to the large amount of unproductive power consumed in driving the large cones that provided the 10 to 1 speed change required in machine operation. The cones, furthermore, required considerable valuable space for their accommodation, were bothersome and burdened with excessive maintenance expenses.

A more efficient machine drive had to be provided and a non-condensing steam turbine, variable speed, drive unit, with provisions for a 10 to 1 speed change and remote speed control, was installed in place of the antiquated and cumbersome reciprocating engine and cone drive. The complete turbine drive, mounted on a cast iron bedplate, occupied no more floor space than had been taken by the supplanted reciprocating engine and the elimination of the large cones released something like 250 square feet of floor area.

The new drive was planned for an overload capacity of 33⅓ per cent and the water rate of the turbine to provide a heat balance for a daily production of approximately 35 tons. Prior to the installation of this compact and efficient, as it has proved, turbine drive, the mill had a production of only 25 tons per day. With the additional boiler capacity provided and the modern steam turbine drive, the daily production has now been stepped up to 45 tons, 80 per cent greater output.

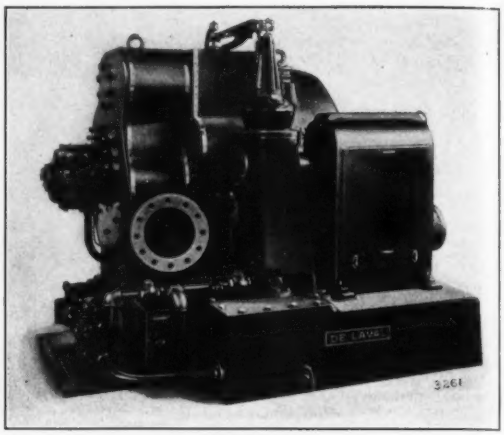
Since the steam turbine drive has been in operation, very little outlay has been required for turbine maintenance and outage, frequent with the old drive, has been virtually eliminated. In addition to all of which, the quality of the product has been greatly improved and the weights of the various grades manufactured held very uniform.



Courtesy: D. E. Whiton Machine Co.

FIG. 7

Steam turbine drive increased production at the Inland Paper Board Co., Montville, Conn., 80 per cent.



Courtesy: De Laval Steam Turbine Co.

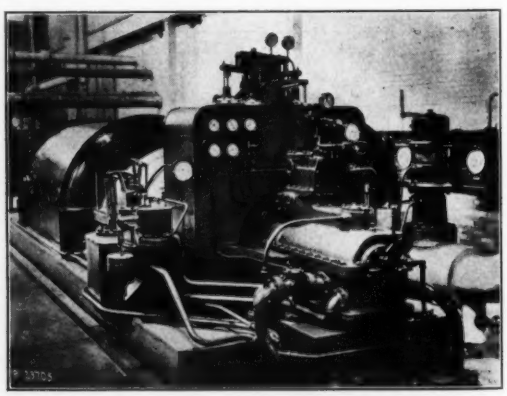
FIG. 8

Variable speed, non-condensing, steam turbine with speed reducing gear and variable speed governor installed in the Northern Paper Mills, Green Bay, Wis.

Variable Speed Steam Turbine Drive

An installation of a variable speed, geared (non-condensing) steam turbine drive of interest, on account of its high efficiency and very accurate speed control, is at the Northern Paper Mills at Green Bay, Wis. This unit, rated normally at 325 horsepower at 600 revolutions per minute, corresponding to a rotor speed of 5,240 revolutions per minute, is built about a single velocity stage type steam turbine that departs from standard machines in certain constructional details.

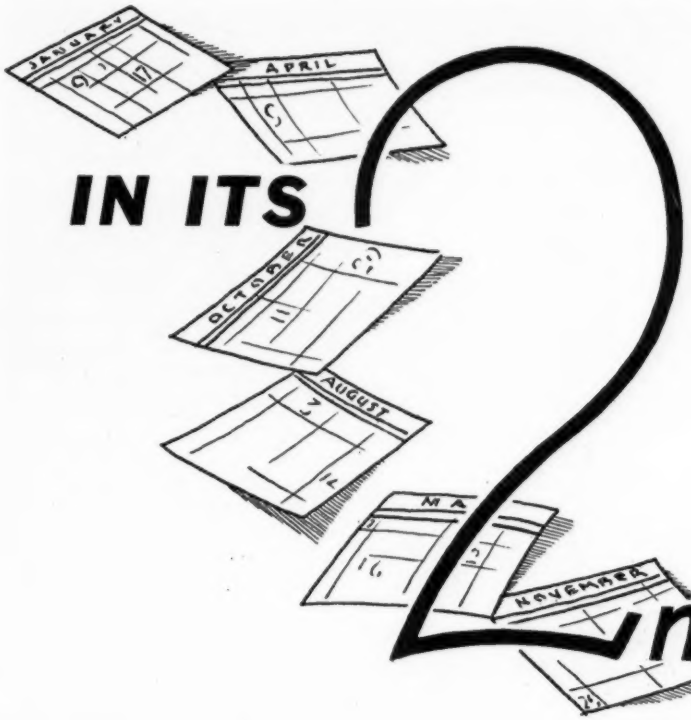
The customary speed controller governor driven from the turbine shaft is replaced by a special variable speed governor driven from a variable transmission from the low speed shaft of the speed reducing gear. By adjusting this variable speed drive, it is possible to set and hold the speed of the paper travel accurately at any rate between 1,200 and 300 feet per minute. The turbine is also supplied with a speed limit emergency trip for shutting off the steam supply should the speed regulating governor fail to function for any reason. This extreme accuracy in speed regulation and positive speed control is essential for



Courtesy: Westinghouse Electric & Manufacturing Co.

FIG. 9

4,000-kilowatt, double extraction, condensing steam turbine installed at the plant of the Rhinelander Paper Company, Rhinelander, Wis., bleeding at 125 and 20 pounds gauge pressure.



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A unit of American Cyanamid Company

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JOLIET, ILL.

the reason that a very delicate grade of paper is produced, known as "Northern Tissue," that is liable to break and cause costly production interruption at even very slight variation in turbine speed.

Dry saturated steam, at 145 pounds gauge pressure, is employed and the turbine exhausts against 20-pound back pressure. The reserve power of the turbine is quite marked, furthermore, for while rated at 325 horsepower it has proved capable of handling 375 horsepower with steam at 130 pounds gauge and 30 pounds back pressure over long continuous periods.

Double Extraction, High Pressure Turbine Saves $70,000.00

An excellent example of a modern condensing steam turbine drive and of double steam extraction for process steam supplies is the comparatively recent installation at the Rhinelander Paper Company, Rhinelander, Wis., where a 4,000 kilowatt unit taking steam at 385 pounds (gauge) throttle pressure and exhausting to a 28.5 inch vacuum constitutes an important element in the extensive improvements made at this plant. This turbine installation is of particular interest, not only because the application is somewhat unusual as yet, but for the reason that the turbine demonstrated its worth during the consummation of the improvements.

A careful study of the mill load conditions existing in 1927 supplied dependable statistics upon which to base a number of plans, or methods, for carrying the mill load economically and at the same time to furnish the million pounds of 125 or 150-pound steam required per day for process operations and about a quarter as much steam at 20 pound pressure for heating requirements, etc. Without going into the many considerations entailed, it will suffice to state that the outcome of the studies, the two most promising plans, were: the installation of high-pressure boilers with a back pressure (non-condensing) turbine to exhaust at 150 pounds and operate in conjunction with an existing, relatively modern, turbine exhausting at 20 pounds; or else the installation of high pressure boilers and of a double extraction (at 125 and 20 pounds) turbine exhausting to a condenser.

Investigations into the probable operating costs of the respective plans indicated that the method employing the double-extraction condensing turbine would be somewhat the more economical. In brief, the double extraction machine promised to effect a saving of approximately 3,000 pounds of steam per hour, and this and other considerations pertaining to back-pressure turbine operating characteristics led finally to the adoption of the double extraction plan.

The boiler pressure decided upon was 400 pounds and the boiler plant was completed before the new condensing turbine was available. While awaiting the new machine, the remodeled plant was operated with the old non-condensing turbine unit supplied with steam at 200-pound pressure. This makeshift proved a much more efficient and economical arrangement to operate than the former plant, substantially reducing the cost of steam, but when finally the new turbine was placed in service still better results were secured. With the increased power demand that developed, a yearly saving of approximately $70,000.00 is said to have been realized, attributable to the high-pressure, double-extraction operation.

(To be continued)

Brown Paper Mill Co. Resumes

The Brown Paper Mill Company will resume operations shortly at its West Monroe mill, giving employment to 500 in addition to timber cutters and haulers.

The Ramsey-Pulvis Clutch

To meet the demand for an automatic starting clutch which would permit the driving motor, or other prime mover, to come up to speed without load, and also give protection against overload shocks, as well as eliminate the transmission of working strains, the Ramsey-Pulvis Clutch is now offered by the Ramsey Chain Company of Albany, N. Y., which exclusively controls its manufacture and sale in the United States. Thousands of Pulvis clutches are now in use and the satisfactory service they have been giving during the past five years is ample evidence of their worth.

The Pulvis principle, which consists of the sure, gradual transmission of power by centrifugally increasing density of hardened steel shot against driving and driven elements of the clutch, is the reverse of American clutch ideas with respect to principle, design and ratings. The applications are far different than those to which industrial users are accustomed, as this clutch can be made a part of the driving member of industrial drives, such as silent or roller chain, flat belt, multiple V-belt, all gear types, or as a coupling on direct connected drives.

Industrial clutches, because of their manual operation and relatively low speeds, have always been thought of as applying directly on a driven machine, a jack shaft, a line shaft. Mounting such clutches direct on the driving unit is special with oil and gas engines, steam engines, etc. The Ramsey-Pulvis clutch with its high speed, balanced design, and tremendous power from centrifugal force, opens up a new, distinct field; namely, on individual drives, usually mounted on the motor or other prime mover.

The Ramsey Chain Company gives a complete description and illustrations of this remarkable transmission unit in its Bulletin No. 132.

Corinth Slightly Curtails Operations

[FROM OUR REGULAR CORRESPONDENT]

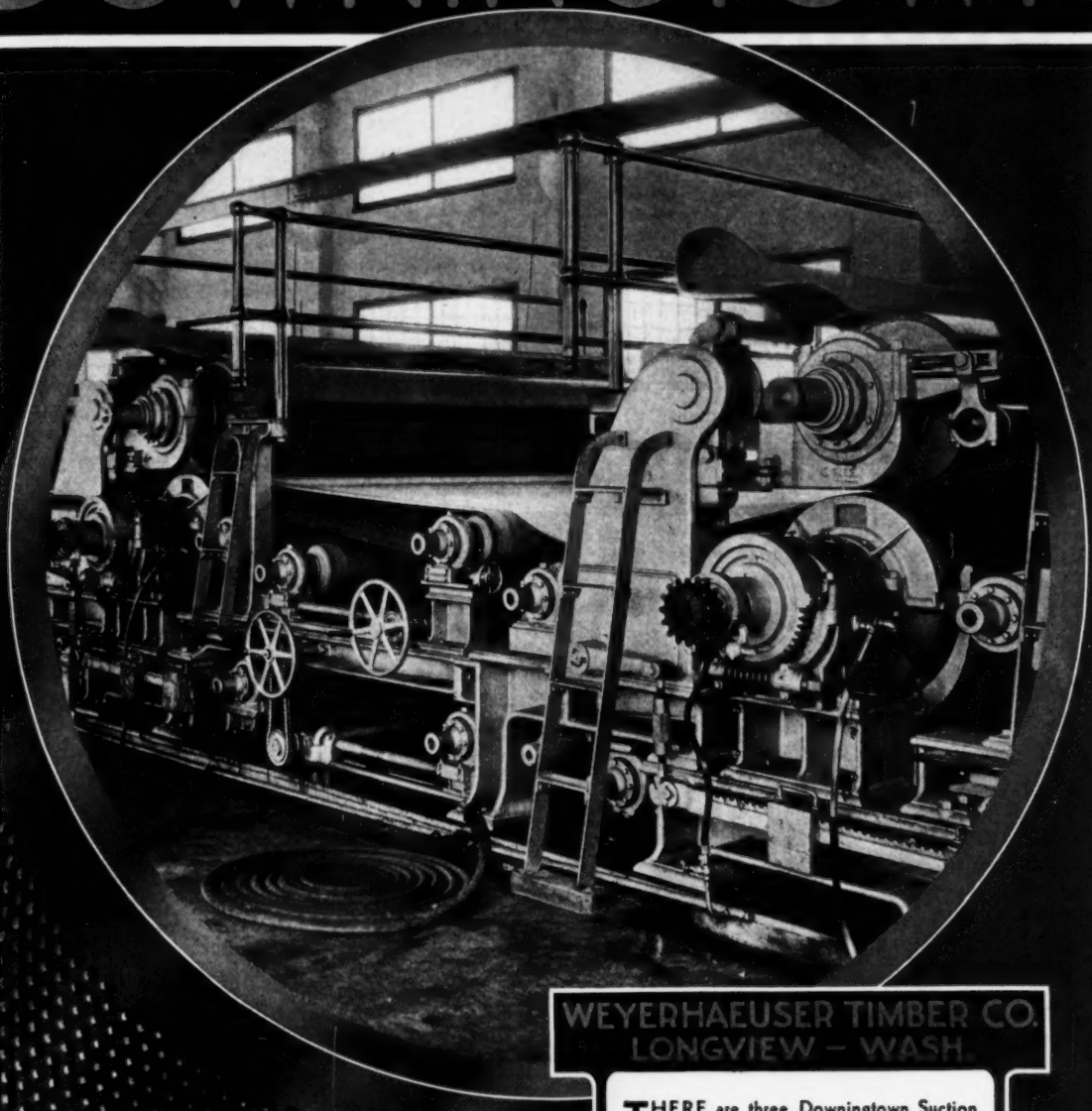
CORINTH, N. Y., March 25.—Operations have been slightly curtailed at the local branch of the International Paper Co. following an order from the main office early this week. Three of the ten machines have ceased operating until further notice under the new schedule and officials claim that they are without information as to the duration of the change. About one hundred men are affected and following a meeting this week it was announced that some may be placed at other jobs.

The mill has been employing about 750 men steadily until this week and the suspension of operations on a portion of the equipment reduces the number only slightly. It is believed here that the remaining machines will continue on full time basis. Despite a ten per cent reduction in wages a few months ago the local branch has been running on full time for a lengthy period. It was announced also that Allen Curtis has resigned as a director after many years of service.

To Be Unpledged Delegate

HOLYOKE, Mass., March 29, 1932—Much interest in papermaking circles has been aroused by the candidacy of William F. Whiting of the Whiting Paper Company for district delegate to the Republican National convention. Mr. Whiting desired to go as an unpledged delegate and Louis K. Liggett, Republican political chief, as instructed for the renomination of President Hoover. As a result while Mr. Whiting's name will appear on the presidential primary ballot, it will not be with the official list of delegates.

DOWNINGTOWN



WEYERHAEUSER TIMBER CO.
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THERE are three Downingtown Suction Rolls on this machine, a 30-inch couch, a 28-inch first press, and a 28-inch second press. These rolls have direct drive and rear end suction ⁂ The rear end suction simplifies the piping and eliminates the necessity of breaking and re-making joints in vacuum piping when putting on clothing ⁂ The rolls are fitted with trouble-proof, self-aligning, ring-oiling, water-cooled, anti-friction journal type bearings. The Downingtown Mfg. Co., Downingtown, Pa.

PAPER TRADE JOURNAL
ESTABLISHED 1872

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OVERLOOKING A GOLD MINE OR THE FORGOTTEN UNGULA

A great many people in the paper and pulp industry who have been anxious to increase their mental equipment have not for various reasons been purchasing Volumes 1 and 2 of the books produced by the industry.

This is perceptible in the record of sales of these two volumes as compared with the other three, and is due to an oversight. It is not kept in mind that Volumes 1 and 2 are as much works of reference as the other three. They should not be looked upon only as primary school books.

A machine tender who wishes to study paper making scientifically buys Volumes 4 and 5, but almost immediately is confronted with a need for public school arithmetic to figure out his speeds, coupled with a little mensuration to get the relations of circumferences and diameters of circles, or a little mechanics to figure out the loads on compound levers.

These things are all available in other works, but usually are not accompanied by a self-explanatory work in elementary arithmetic or mechanics. If recourse is had to a school text book, in most cases a teacher is presupposed, so certain explanatory details cannot be found or else are insufficient.

Going a little further, Troutwine, the eminent author of one of the standard engineers' handbooks, made a statement in one of his prefaces that engineers were often not good mathematicians. He might not find that to be so largely the case with the present generation of engineers. However, the engineer in a mill may not buy Volumes 1 and 2 on the assumption that what he needs is technical knowledge of the industry, then find he has forgotten how to calculate the liquid contents of a cylinder in an inclined position when he can measure the depth of liquid in only one place; perhaps he has also forgotten what an "ungula" is, making it difficult to look up his problem in handbooks. His chemistry, too, may have suffered for lack of practice, and he may want to check up on the characteristics of acid and alkalies without wasting a lot of time. Or again a chemist may want a little help on the resolution of forces.

Volumes 1 and 2 constitute a good working library of general technology, and cover a range of ground that would otherwise be available for reference only in a number of works, in some cases calling for a long search. They are especially useful to the technical man in an isolated mill, with a limited library.

We think that we are not overstating the case when we say that in neglecting Volumes 1 and 2, a great many men from all ranks are overlooking a gold mine. In many instances the student will find that he can use Volumes 3, 4 and 5 readily and effectively only with the aid of Volumes 1 and 2.

IT IS YOUR CONVENTION

F. J. Rooney, general chairman of the Convention Committee of the American Pulp and Paper Mill Superintendents' Association, believes that superintendents should this year make a more determined effort than ever to attend the national convention of the association. "The continued urge of our superiors that we must operate our plants more efficiently and produce a quality product at the lowest possible cost, makes it necessary that we superintendents be fully informed on the latest and best equipment, modern processes, and also on modern methods of management. At our Annual National Convention to be held this year in Buffalo, N. Y., on June 2, 3, and 4, a program bringing to you information of value on all the above mentioned subjects, is being carefully built up.

"If you have any suggestions as to subjects for discussion send them at once to the general chairman and every effort will be put forth to comply with your suggestions. The fact that you may have some problem troubling you and which may not be specifically covered on the program does not mean that you will be unable to get valuable help on such a problem. Quite the contrary is true, for opportunity will be presented for you to have any problem discussed in the meetings. Also, through personal contacts and conversations you will be able to gain information of value.

"The various committees are working faithfully to arrange a convention that will be better and carry more value to the superintendents and to the industry than any previous convention. Will you do your share as fully as the committee members are doing theirs? I am sure you will. Your share is to be present at the Convention. Start right now planning to attend; do not offer present conditions as an excuse for inability to go to Buffalo next June. You need the Convention and the Convention needs you.

It is Your Convention!

TAPPI Committee Chairman Appointed

Allen Abrams, president of the Technical Association of the Pulp and Paper Industry and technical director of the Marathon Paper Mills Company, has announced the following division and committee chairman appointments for 1932-1933.

Management Division—W. R. Maull, Dill & Collins Co., Philadelphia, Pa.

Education—H. G. Noyes, Wisconsin Vocational School, Appleton, Wis.

Patents—C. W. Rivise, Philadelphia, Pa.

Waste—C. M. Baker, engineer, American Paper and Pulp Association, New York.

Engineering Division—E. F. Bearce, Chillicothe Paper Company, Chillicothe, Ohio.

Heat and Power—M. H. Teaze, Hardy S. Ferguson & Co., New York.

Equipment—Frederick Wierk, Johnson & Wierk, New York.

Materials of Construction—J. D. Miller, York Haven Paper Company, York Haven, Pa.

Raw Materials—Division—J. L. Parsons, Hammermill Paper Company, Erie, Pa.

Non-fibrous Raw Materials—A. C. Dreshfield, Paper Makers Chemical Corporation, Kalamazoo, Mich.

Fibrous Raw Materials—John Traquair, Mead Corporation, Chillicothe, Ohio.

Testing Division—E. O. Reed, Crane & Co., Dalton, Mass.

Fibrous Materials Testing—M. A. Youtz, Northern Paper Mills, Green Bay, Wis.

Pulp Testing—D. E. Cable, U. S. Rubber Company, Passaic, N. J.

Paper Testing—B. W. Scribner, Bureau of Standards, Washington, D C.

Non-fibrous Materials Testing—R. C. Griffin, A. D. Little, Inc., Cambridge, Mass.

Operating Division—F. C. Clark, Skinner & Sherman, Inc., Boston, Mass.

Preparation of Fibrous Materials—C. A. Blodgett, A. P. W. Paper Company, Albany, N. Y.

Preparation of Non-fibrous Materials—K. A. Taylor, Oxford Paper Company, Rumford, Me.

Mechanical Pulping—W. J. Garding, Watab Paper Company, Sartell, Minn.

Alkaline Pulping—H. R. Murdock, Champion Fibre Company, Canton, N. C.

Acid Pulping—V. P. Edwardes, International Paper Company, New York.

Stuff Preparation—James Coghill, Noble & Wood Machine Company, Hoosick Falls, N. Y.

Paper Manufacture—L. M. Smith, Cherry River Paper Company, Richmond, W. Va.

Finishing, Processing and Converting—J. J. O'Connor, Mead Corporation, Chillicothe, Ohio.

Research and Development Division—C. E. Curran, Forest Products Laboratory, Madison, Wis.

Abstracts and Bibliography—C. J. West, National Research Council, Washington, D. C.

Permanence and Durability—F. C. Clark, Skinner & Sherman Inc., Boston, Mass.

Use Requirements—P. K. Baird—Forest Products Laboratory, Madison, Wis.

The direction of the divisions is handled by C. C. Heritage, vice president of the association, and manager of the Maine Coated Division of the Oxford Paper Company.

TAPPI Notes

W. K. Kidder formerly chief chemist of the Allied Paper Mills, Kalamazoo, Mich., is now with the Bryant Paper Company in Kalamazoo.

E. A. Riley has resigned his position as superintendent of the Wood Fibre Corporation, Lisbon Falls, Maine, and is now located at Livermore Falls, Me.

J. A. Fincken formerly with the Advance Bag Company at Howland, Maine, is now chemical engineer at the Moore & Thompson Paper Company mill in Bellow Falls, Vt.

H. P. Stockwell Jr., has resigned his position as chemist at the Kenogami, P. Q. mill of Price Brothers Company, Ltd., and may be reached at Stanstead, P. Q.

W. G. Cuttle formerly resident engineer for Ste. Anne Paper Company Ltd., Beaupre, P. Q., is now production manager of the Cellophane Division of the Canadian Industries Ltd., Shawinigan Falls, P. Q.

F. W. Muncie formerly research chemist at the Parlin, N. J. plant of E. I. duPont de Nemours & Co., is now with the Glidden Company, Cleveland, Ohio.

E. H. Nunn is now research chemist for the Western Waxed Paper Company He was formerly chemist at the Camas, Washington, mill of the Crown Williamette Paper Company.

J. C. Nutter is now with the Canadian Paperboard Company at Toronto, Ontario. He was formerly in the research department of Price Bros. Company Ltd., Quebec, P. Q.

Le Clare F. Parmenter who was in the sulphite pulp department of S. D. Warren Company is now located at 23 Nevens Street, Woodfords, Maine.

Hjalmar J. Procope, managing director of the Finnish Papermill Association, Bertel Sjoberg, manager of the Newsprint Division of the association, and Erkki Ahlstrom, managing director of the Warkaus Mills in Finland, are visiting the United States. Mr. Procope was until recently foreign minister of Finland.

The Pacific Section of the Technical Association will hold its spring meeting on May 6th and 7th at Portland, Ore. Visitors from the East will be particularly welcome. Anyone desiring to present a paper at the meeting should write Ralph B. Hansen at the Pulp Division of the Weyerhaeuser Timber Company, Longview, Wash.

United Paperboard Receivers Appointed

The Irving Trust Company and Sidney Mitchell, the latter under $50,000 bond, have been appointed ancillary receivers for the United Paperboard Company, 171 Madison avenue, New York, by Judge Bondy, upon the application of J. Andersen & Co., a creditor for $6,197, and with the assent of the debtor corporation. The corporation, which is capitalized at $14,000,000, controls the Benton and Fairfield Railway Company, operating a railway in Maine; and the Upco Corporation, which operates mills in Maine, Indiana, Illinois, Ohio, New Jersey and New York. A consolidated balance sheet as of February 27 last shows assets of over $14,000,000. During the past three years operating losses of $750,000 have been sustained. The receivership originated in New Jersey.

Strathmore Papermakers' Club Meets

[FROM OUR REGULAR CORRESPONDENT]

WORONOCO, Mass., March 29, 1932—The final meeting for this season of the Strathmore Papermakers' Club was held last week, the speaker being D. C. Galarneau of the state forest service who showed views of the work.

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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

The National Research Council, 21st and B Street, Washington, D. C., through Dr. Clarence J. West, extends the courtesy of its photostat service to members of the Technical Association of the Pulp and Paper Industry. Owing to a limitation of personnel and time, this service cannot be extended to non-members.

The charge for the photostat service is: 9 x 11 inches—18 cents per page, 18 x 11 inches—35 cents per page, 22 x 18 inches—70 cents per page, minimum charge, 50 cents.

Payment should be made upon receipt of invoice.

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Paper Specialties

Process for the Manufacture of Carbon Paper. Firma Gunther Wagner, Hannover. Ger. pat. 518,272 (March 24, 1928). Addition to Ger. pat. 516,975. In further carrying out the process according to Ger. pat. 516,975, a solution of isomers of natural or artificial rubber, gutta percha, balata or related materials, coloring materials and if necessary softening materials are added. The solution is then brought upon the paper web in determined places or on the whole surface, and the sheet finally dried.

Process for the Manufacture of Carbon Paper. Firma Gunther Wagner, Hannover. Ger. pat. 518,273 (Oct. 9, 1928). Addition to Ger. pat. 516,975. The solution of natural or artificial rubber, gutta percha, balata or the isomers of these compounds are brought upon the sheet and after the partial or complete removal of the solvent, the coloring matter is added to the sheet. —J. F. O.

Process for the Manufacture of Carbon Paper. Firma Gunther Wagner, Hannover, Ger. pat. 518,274 (Jan. 10, 1929). Addition to Ber. pat. 516,975. A mixture of natural or artificial rubber, gutta percha, or balata with natural or artificial rosin, fats and wax like esters of the higher fatty acids, and coloring materials, and if necessary an addition of softening substance, is brought upon the sheet in the form of a solution and the product dried. —J. F. O.

Insulation Material. Fritz Schmidt, Troisdorf, Germany. Ger. pat. 518,500 (Sept. 15, 1925). 17 kilograms of nitrocellulose containing water are mixed with 13 kilograms of gelatinizing substance i.e. triacetin, 30 kilograms of acaroid resin and 40 kilograms wood meal, and if necessary with an addition of coloring material, heated and kneaded to a homogeneous mass. The mass so obtained is pressed under high temperatures into the form desired.—J. F. O.

Process for the Manufacture of Multiple Layered Felts, Paper, Board, with Webs, Wires, Bands or Threads Inbedded Therein. Otto Engel, Kassel. Ger. pat. 514,787 (Oct. 15, 1926). Addition to Ger. pat. 483,735. In carrying out the process according to Ger. pat. 483,735, asphalt, rosin, bitumin, or similar substances, or mixtures of these substances are used with oils, tars, etc., whose melting point is higher then the melting point used later in the drenching of the finished product.—J. F. O.

Process for the Manufacture of Two-Sided Metal Foil on Paper, Board, and Similar Substances. Leopold Rado, Berlin. Ger. pat. 514,577 (April 1, 1927). Two webs, each having one side pasted with metal foil, done in the usual manner, are themselves pasted together on the sides without the metal foil. Before bringing the two webs together, the metal foils have a protective coating added, such as celluloid or colophony.—J. F. O.

Process for the Manufacture of One Sided Finished Paper, Carton, Board and Similar Materials by Using the So-Called "Deutsch Press." I. G. Farbenindustrie, A. G. Frankfurt. Ger. pat. 518,724 (July 2, 1928). The paper is moistened before going to the finishing cylinder and on the side finished by a solution of alkyl cellulose.—J. F. O.

Arrangement for the Manufacture of Uniform Heavy Board on a Roll Machine. Fritz Rühlemann, Wolfsgrun. Ger. pat. 520,348 (April 3, 1928). The formation roll which takes the stock from the cylinder is coupled with a mechanical or electrical device which is accentuated by the number of revolutions of the formation roll, and in this manner the board is removed in the required weight from the roll.—J. F. O.

Preparation of Highly Sensitive Negative Photographic Paper. E. Hayez. Belg. pat. 377,442 (March 31, 1931).—The paper stock is treated with a mixture of sulphuric acid of medium concentration, a polyhydric alcohol, and eventually a solution of potash or alkali. The treated paper is then coated with a sensitized photographic emulsion to which is added 0.2 to 2 per cent of a fatty hydrocarbon after aging.—A. P.-C.

Process for Waterproofing Paper and Cardboard. Papeteries Navarre. Belg. pat. 377,604 (March 31, 1931).—Impregnation is carried out with a solution of alkali caseinate containing at least sufficient formalin to effect complete coagulation of the casein and containing also a substance capable of retarding coagulation until the beginning of the drying of the paper or board.

TAPPI Section, Page 162

The latter is then heated to about 135°C., and may be subsequently treated with a solution of aluminum acetate containing formalin and dried again.—A. P.-C.

Rendering Paper or Other Carbohydrate Material Resistant to Moisture. Julius Kantorowicz. U. S. pat. 1,816,973 (Aug. 4, 1931).—The material is impregnated with formaldehyde and an acid such as nitric acid, and dried at a temperature of about 120°C.—A.P.-C.

Safety Paper. Burgess W. Smith assignor to The Todd Co. U. S. pat. 1,817,171 (Aug. 4, 1931).—A paper suitable for bank cheques, etc., has an inherently warning character formed on it as an unprinted surface portion on a ground printed in ink of an indelible and initially invisible character such as one containing manganese ferrocyanide, tolidine hydrochloride or benzidine sulphate adapted to react with and to be rendered conspicuously visible by eradicating fluids applied to the paper.—A. P.-C.

Paper Mill Reduces Steam Consumption 30 Percent Per Unit Production. A. T. Hurter and G. L. Stuart. Power 74, no. 18:639-644 (Nov. 3, 1931).—A fairly complete description of the power developments made by the Abitibi Power and Paper Co. at Iroquois Falls, Twin Falls and Island Falls, Northern Ontario. The economics were effected by using a larger proportion of water power and also from boilers using waste fuel. Diagrams and specific data help in visualizing the installations.—C. J. W.

Motors and Water Wheels Drive Pulp Mill Grinders. A. T. Hurter. Power 74, no. 22:796-797 (Dec. 1, 1931).—Two water wheel driven alternators converted into combination synchronous motor and hydraulic turbine drives for pulp mill grinder lines provide means of obtaining a load balance between river flow and electric power supply from other hydro plants.—C. J. W.

Condenser Paper. Compagnie Française pour l'Exploitation des Procédés Thomson-Houston. Fr. pat. 710,497 (Jan. 21, 1931).—Kraft pulp is subjected to increasingly severe beating during progressively increasing periods, which may total as much as 36 hours. Kraft pulp treated in this way can give a well-formed sheet as thin as 0.00034 in. suitable for use in electrical condensers, for which purpose it can give as good a sheet as linen rags at approximately half the cost for the same thickness. Though particularly suitable for the treatment of kraft the process is applicable to other kinds of pulp.—A. P.-C.

Mills

Paints in Pulp Mills. Freitag. Wochbl Papier fabr. 62, No. 29:696 (July 18, 1931).—The sulphur dioxide present in the air in pulp mills makes a careful choice of pigments and binders imperative. Wood oils are recommended in place of linseed oil in the painting of wood with oil colors. The pigment should not be decomposed by sulphur dioxide, the most suitable being titanium oxide free from zinc oxide, and ignited iron oxide colors. Coatings with a tar basis is very resistent, and is especially recommended for iron construction. For the coating of walls and brick work, water glass is suitable with the addition of silicic acid esters which impart a hardening action.—J. F. O.

Chromium Plate in Paper Mills. John B. Allen. Paper Mill 54, No. 45:8-9 (Nov. 7, 1931).—A brief discussion of the advantages of chromium-plated equipment (calender rolls, press rolls, felt rolls, pasting rolls, embossing rolls, screen plates, suction box covers, dryers, breaker rolls and evaporator tubes).—A. P.-C.

Advance In Electric Drives and Controls. Reginald Trautschold. Paper Trade J. 93, No. 20:45-7 (Nov. 12, 1931).—Recent advances are exemplified by the two-motor super-calender drive recently installed at the Champion International Co., (Lawrence, Mass.) and the electric switching equipment system which has been placed in service at the Southern Kraft Corp. (Panama City, Fla.), both of which are described.—A. P.-C.

Air Conditioning in the Paper Industry. W. C. Schlichting. Paper Trade J. 93, No. 18:69-70 (Oct. 29, 1931).—A brief discussion of the effect of variations in atmospheric conditions on paper, the necessity for air conditioning in press rooms and the temperatures and humidities which should be maintained, the necessity of co-operation between the paper maker, printer, lithographer and air-conditioning engineer to the end of establishing standard operating conditions in all press rooms, and the necessity for a constant temperature and humidity room in every paper mill laboratory, with a description of the equipment required and results which may be expected.—A. P.-C.

Profits and Handling Costs, Cranes, Hoists, Tractors and Trucks. Reginald Trautschold. Paper Trade J. 93, No. 18:77-82, 88 (Oct. 29, 1931).—A discussion of the savings which can be effected in pulp and paper mills by the judicious use of cranes, hoists, tractors and trucks.—A. P.-C.

Pneumatic Conveyor Installation in Pulp and Paper Mills. H Dietrich. Pulp Paper Mag. Can. 30: 1163-1164 (Oct. 22, 1931).—A brief outline of some of the possible applications in pulp and paper mills of pneumatic conveyor systems and their merits.—A.P.-C.

Duro-Micrometer for Measuring the Hardness of Rubber Coverings for Paper Machine Rolls. Anon. Papeterie 53:1126-1130 (Sept. 25, 1931).—An illustrated description of the construction and operation of the instrument adopted by the French paper making machinery manufacturers' association, the principle of which consists in measuring the penetration of a steel ball 1 cm. in diameter under a load of 1 kg. The hardness is measured by applying the instrument directly to the roll. An attachment permits of determining also the hardness of flat rubber sheets.—A. P.-C.

Siemens System of Automatic Boiler Control. Anon. Paper Maker 82, No. 4: lxxxviii-xc (Oct. 1, 1931).—The system provides automatic regulation for the supply of fuel and air, so as to maintain a constant steam pressure under varying loads, and the automatic controls, which are effected by a combination of electrical resistances, are as follows: the fuel supply is controlled by varying the speed of the stoker or the pulverized-fuel feeder motors; the air supply is controlled by varying the opening of the air and flue-gas dampers or by varying the speed of the forced and induced-draught fan motors, or by both in combination; the fuel air ratio is controlled by an automatic CO_2 controller, and in some cases an additional carbon monoxide + hydrogen controller is fitted—an independent hand-operated regulator for adjusting the fuel: air ratio is also provided; there is also a control for the combustion-chamber pressure by means of an automatic pressure controller.—A. P.-C.

Steam Economies. F. F. Kauffman. Paper Mill 54, No. 43: 14, 18, 26, (Oct. 24, 1931); Paper Ind. 13:981-983 (Nov. 1931).—A brief discussion of how to determine how economies can be effected in the generation and use of steam.—A. P.-C.

Northern Paper Mills Build New Laboratory. Anon. Paper Trade J. 93, No. 18:42, 44 (Oct. 29, 1931).—A brief description of the new laboratory at the Green Bay, Wis., plant of the Northern Paper Mills.—A. P.-C.

Modernization of Mills. Joseph H. Wallace. Paper Mill 54, No. 45:10, 12, 22-23 (Nov. 7, 1931).—A discussion of the part played by obsolescence in estimating the advisability of modernizing pulp and paper making equipment and mills.—A. P.-C.

Miscellaneous

When Did the Inventor of Paper Live? E. Friedmann. Papier-Fabr. 29, No. 31:526-527 (August 2, 1931).—The inventor of paper, in its real form, as distinguished from papyrus and parchment, is the Chinaman Ts'ai Lun, who first prepared paper in the year 105 B. C. from the bark of trees, hemp, rags and fish nets. Through court intrigues the inventor committed suicide. These facts have been sustained through recent archaeological discoveries. The use of gypsum for improving the surface, as well as the use of lichen and starch for sizing also originated with the Chinese. The Arabians learned the art from

Chinese prisoners in Samarkand in 751 A. D. The first German paper was made in Ravensburg in 1290.—J. F. O.

Technical Co-Operation in the Development of Coast Standards. Thomas J. Burke. Paper Trade J. 93, No. 19:35-36, Nov. 5, 1931).—An address showing the importance of accurate cost standards in pulp and paper mills and the necessity of co-operation from the technologists of the industry to enable the cost department to develop them.—A. P.-C.

United States Patents on Paper Making. Third Quarter, 1931. Clarence J. West. Paper Trade J. 93, No. 17:35-37 (Oct. 22, 1931).—A list in numerical sequence of patents relating to pulp and paper making issued at Washington during July, August and September 1931.—A. P.-C.

Production of Bleached Pulp. John Traquair and Francis G. Rawling assignors to The Mead Research Engineering Co., Can. pat. 314,416 (Aug. 18, 1931).—Fibrous material is cooked with a liquid containing sodium sulphite and sodium carbonate. The cooked material, diluted to a consistency of less than 5 per cent is treated with chlorine water, the consistency of the diluted material being controlled to prevent during the chlorination an objectionable rise in temperature. The material is then dewatered to a consistency of substantially 15 per cent or higher and treated with chlorine gas, reaction products of the chlorination are washed out and the resulting pulp is bleached. Hardwood from deciduous trees, such as chestnut, may be treated to produce a white pulp of good color and high strength for use in printing paper manufacture.—A.P.-C.

Present Trends in Bleaching. C. M. Connor. Paper Trade J. 93, No. 17: 29-31 (Oct. 22, 1931).—A brief outline of the present trend towards the substitution of bleached kraft for sulphite pulp, and of the advantages of bleached kraft over sulphite from economic and technological standpoints.—A.P.-C.

Diseases of Paper. Wochbl. Papier. 62, No. 22: 525 (May 30, 1931).—The analysis of dirt specks on the finished paper is universally known but little is known of the specks which appear after the paper is a few years old. These specks are due mostly to decay and bacterial growth and they ultimately destroy the sheet. Moisture aids the growth of the bacteria and fungus. Chemicals have been used to destroy these growths but are not satisfactory. Ultra violet rays have been used and have been found satisfactory.—J. F. O.

Raw Materials

Concerning the Determination of the Volume Weight of Wood with Special Regards to Actual Practice. H. Niethammer. Papier-Fabr. 29, No. 34: 557-560 (Aug. 23, 1931).—The sources of error in the determination of the volume weight of wood are critically discussed. On the basis of his own results, the author recommends the determination of the volume weight by the submersion method in water. Discs 2.5 centimeters thick were cut from the log and dried at 105 deg. C. and then weighed and submerged under water while still warm. The method and apparatus are described in detail. An average volume weight for spruce was found to be 0.435 and aspen 0.455.—J. F. O.

Wood for Ground Wood and Chemical Wood Uses. Gustav G. Klemm, Papier-Fabr. 29, No. 34:560-568 (Aug. 23, 1931).—The author differentiates between four qualities of spruce wood on the basis of the conditions of its growth and other properties. Ideal wood; medium quality; the usual type for ground wood and chemical pulp production; logs for ground wood of dense hard wood, often containing red wood; and logs for ground wood of a poor quality grown uniformly or full of knots. The quality was characterized by the average width of the annual rings, contents of knots, the ease in removing the bark, dry material, etc. There is a certain relation between the tendency to rot and the width of the annual rings.—J. F. O.

Some Properties of Slash Pine. Benson H. Paul Pulp Paper Mag. Can. 32:9-10 (Jan. 7, 1932).—Data are presented on the variation in the weight of the wood and the amount of heartwood in slash pine at various heights in the trees for stands of different ages and stocking.—A. P.-C.

Paper Making Qualities of Hook Pine (Pinus Uncinata). L. Vidal, Maurice Brot and Marcel Aribert. Papier 34:1305-1311 (Dec., 1931).—Laboratory pulping tests carried out by the sulphite and soda processes indicated that hook pine presented no special difficulties in pulping, requiring possibly a slightly stronger treatment than Scotch pine. The yields were about 49 per cent to 53 per cent. The sulphite pulp is readily bleached with 4 per cent to 8 per cent of available chlorine (depending on the degree of whiteness desired); it would be suitable for the manufacture of either coarse or fine papers. The soda pulp cannot be bleached to a pure white and would be most suitable for the manufacture of brown wrappings and kraft papers. The micrographic characteristics of the pulps are described and illustrated.—A. P.-C.

Chemical Composition of the Wood of Thochodendron Araliodes. Jan Wiertelak. J. Forestry 29:64-67 (1931).—Trochodendron araliodes is an evergreen tree native to Formosa and Japan. The structure of the wood is intermediate between that of the hard woods and soft woods.—A. P.-C.

Wood Pulp for Viscose Manufacture. Anon. Russa 7:1377 (Sept., 1931).—A brief discussion of the requirements of viscose-grade pulp as regards alpha-cellulose, ash and lignin contents.—A. P.-C.

Sugar Cane Straw for the Manufacture of Strong Board for Building Purposes. Fred W. Freise. Wochbl. Papierfabr, 62, No. 28:669 (July 11, 1931).—The manufacture of strong board from Brazilian sugar cane.—J. F. O.

Process for the Manufacture of Valuable Fibrous Stock, Especially from the Waste of a Spinning Mill. Hermann Wenzl, Haus Gretesch. Ger. pat. 524,298 (Jan. 26, 1926).—Valuable fibrous materials are obtained from flax, hemp straw, jute, etc. by treating them with a liquor containing mono and bisulphites under addition of neutral salts at higher temperatures and preferably under pressure. The liquor contains one part mono-sulphite and three to three and a half parts bisulphites and addition of soluble sulphates and contains chlorides of the alkalies or alkaline earth, of magnesium or aluminum.—J. F. O.

Cost Price of Brazil's Plant Raw Materials for the Manufacture of Paper. Fred W. Freise. Wochbl. Papierfabr. 62, No. 41:968-71 (Oct. 10, 1931).—Tables containing the principal facts of over 25 different trees growing in Brazil, such as size of trees, specific gravity, location, yield of pulp, temperature and pressure in cooking, and the strength test of the finished pulp.—J. F. O.

New Cheap Form of Raw Material for Production of Paper. Yu. Zhvirblyanskii. Bum. Prom. 10, no. 8:30-33 (1931); C. A. 26: 595-596.—The author discusses the prospects for production of paper pulp from the refuse obtained in reworking exhausted sugar beet waste for glue.—C. J. W.

Utilization of Fresh Water Hydrophytes in Industry. A. Sovetova. Bum. Prom. 10, 8:22-30 (1931).; C. A. 26:597-598.—A discussion is given of the utilization of fresh-water hydrophytes in the production of paper, with special reference to *Cladophora* and *Rhizoclonium* of the family *Cladophoracae*.—C. J. W.

Application of Seaweeds in the Production of Roofing Cardboard. N. Perekalskil. Bum. Prom. 10, no. 1:37-41 (1931); C. A. 26:576.—The application of seaweeds from Siberian lakes, whether cooked or uncooked, and mixed with 0, 25, 50 and 75 per cent rags, for production of roofing cardboard proved unsatisfactory.—C. J. W.

Microscopic Study of Cellulose Pulps Prepared from Parenchymatous and Vascular Tissues of Corn Stalks. Florence E. Hooper. Iowa State Coll. J. Sci. 5:237-241 (1931); C. A. 26:300.—The ratio of length to width of cells, in the fibers of corn stalks is 33; in the pith, 1. Successive treatments with absolute alcohol, followed by phosphoric acid revealed concentric walls in the cells of the fibers. The fibrils of the outer layers were wound at right

angles to the major axis; those of the inner layers were wound spirally. In shape and structure these cells resemble those of wood.—C. J. W.

Cellulose and Lignin

Action of Acids on Cellulose. Bouchonnet, Jacquet and Mathieu Bull. Soc. Chim. France 47, 1265-1270 (1930).—Seven so-called hydrocelluloses prepared from esparto and cotton linters by means of different acids and conditions gave the same x-ray diagrams but varying copper numbers. A qualitative comparison of the copper numbers with photomicrographs of the corresponding fibrous material showed that the copper number increased as the particle size decreased. The products from the linters gave clearer reflections (x-ray patterns) than those from the esparto. This is explained by the assumption that the formation of the crystallites of the linters is more perfect than that of the esparto. The results were thought to agree with the hypothesis that cellulose consists of a crystalline phase with an enveloping amorphous phase, the latter being destroyed by the acids and the individual crystallites being liberated. A subsequent destruction of these crystallites was considered the source of resultant polysaccharides.—A. P.-C.

Factors Influencing Properties of Isolated Wood Lignin. E. C. Sherrard and E. E. Harris. Ind. Eng. Chem. 24:103-106 (Jan., 1932).—Temperature, acid concentration, and length of time of the reaction must be controlled in order to obtain, by the sulphuric acid method, lignin as unchanged as possible.—A.P.-C.

Cellulose Fiber for the Preparation of Esters. George A. Richter assignor to Brown Co. U. S. pat. 1,821,321 (Sept. 1, 1931). —A depolymerized cellulose fiber suitable for esterification which contains over 95 per cent alpha-cellulose, has a soda solubility (in 3 per cent caustic soda solution) of less than 1 per cent and a copper number less than 2, is prepared by washing alkaline depolymerized, previously mercerized and aged cellulose fiber and then dissolving the non-alpha-components in an alkaline solution. —A. P.-C.

Purified Wood Pulp Suitable for Esterification. Stewart E. Seaman assignor to Eastern Manufacturing Co. U. S. pat. 1,822,174 (Sept. 8, 1931) —A pulp such as may be prepared by the sulphite process is purified as by alkaline reagents and moisture is partially removed from the pulp; the latter is formed into fine aggregates by a picking operation and is finally dried.—A. P.-C.

Preparing Purified Cellulose from Sulphite Pulp. Charles A. Blodgett and Hugo H. Hanson assignors to Eastern Manufacturing Co. U. S. pat. 1,822,125 (Sept. 8, 1931).—Sulphite pulp is bleached and then treated with a reactive compound of sulphur in alkaline solution such as a solution formed from caustic soda and sodium sulphite.—A. P.-C.

Mechanical Process

Pocket Grinders, vs. Continuous Grinders. K. Klimpke. Wochbl. Papierfabr. 62, No. 33:785-787 (Aug. 15, 1931).—Resume and discussion of the various points in which the author disagrees with a previous article by Brecht and Schaun which appeared in number 10 Wochbl. Papierfabr. of this year.—J. F. O.

Pocket grinders and Continuous Grinders. K. Klimpke. Wochbl. Papierfabr. 62, No. 34:811-12 (Aug. 22, 1931).—More concerning the merits of the pocket grinder versus the continuous grinder. The author gives the following figures as comparable, pocket grinder with 116 k.w.h. and the continuous grinder with 128 k.w.h. produces the same stock from the same wood under similar conditions. Other comparable figures are for the pocket grinder, 109.0 k.w.h. with a tearing length of 2225.5 meters, and for continuous grinders, 122.5 k.w.h. with a tearing length of 2102.7 meters.—J. F. O.

Multiple Utilization of Cooking Liquor in the Monosulphite Method of Preparation of Cellulose. K. Dolgov and I. Markov. Bum. Prom. 10, No. 4:46-53 (1931); C. A. 26:594.—Repeated use of the monosulphite liquor for pulping straw was investigated. The monosulphite was obtained from the waste of the phenol production containing 75 per cent sodium sulphite, 7.3 per cent sodium sulphate and some phenol and after each pulping operation was made up to full strength with addition of sodium sulphite. The mechanical quality of the paper is equal to that obtained with fresh liquor, while the yield of cellulose increases with repeated use of the same liquor, but requires for its bleaching a larger amount of bleaching powder than usual. Liquors containing large quantities of sodium sulphite produced pulp of higher quality, lighter color and better bleachability.—C. J. W.

Electrical Ground Wood Mill in France. Zellstoff Papier 11, No. 11:624 (Nov., 1931).—The recently built ground wood mill of "La Bilescose" in Vierzon-Farges is described. They use pine wood for the ground wood for newsprint and other cheap papers. The stock has a high content of rosin.—J. F. O.

Technology and Theory of Ground Wood. Strauch. Wochbl. Papier 62, No 45:1053-56 (Nov. 7, 1931).—An attempt is made to set up the theory of ground wood under consideration of a number of points in wood grinding, such as the temperature of the trough and the temperature of the shower water.—J. F. O.

Groundwood Manufacture. Hernard Bornstein. Mass. Paper Mill 55, No. 1:9, 18, 20 (Jan. 2, 1931).—A. P. C.

What Has Been Done in the Pulp Mills to Suit the Paper Mills? Per Klem. Norak Traemassekompani A/S, Oslo. World's Paper Trade Rev. 96:1281-1290 (Oct. 16). 1372-1382 (Oct. 23, 1931); Pulp Paper Mag. Can. 31:1351-1352, 1366, 1368, 1377-1378, 1386 (Dec. 10, 17, 1931).—A review of the work carried out during the last 6 or 7 years by the Norwegian groundwood mills with a view to improving the means of evaluating groundwood and to better meeting the requirements of the paper mills.—A. P.-C.

Alkali Processes

Multiple Utilization of the Cooking Liquor in the Mono-Sulphite Process in the Production of Straw Pulp (Russian Experiment). Zellstoff Papier 11, No. 11:621-22 (Nov., 1931).—The authors have made experiments with the Keebra process which is in part the use of mono-sulphite liquor for the cooking of the wood, for the production of straw pulp.—J. F. O.

Ungerer Process for the Manufacture of Sulphate Pulp. Wochbl Papierfabr 62, No. 48:1118 (Nov. 28, 1931).—The author describes the process for the cooking of wood chips with an alkaline solution, in which the cooking liquor is used successively in several digesters in the counter current principle.—J. F. O.

Process for the Recovery of Alkali from the Waste Liquor by Means of a Pulp Cooking with Alkali Bisulphite solution. Stora Kopparbergs Bergslags A. B. Falun. Swed. pat. 71,405 (June 6, 1926).—The process is changed from the main patent number 66,272. The waste liquor is treated with the necessary quantities of alkali, that is alkali salts and sulphur dioxide before its oxydizing combustion and use in the sulphate pulp process.—J. F. O.

Evaporation of Waste Liquors in Pulp Mills. F. A. Oetken, Papier-Fabr. 29, No. 33:545-548 (Aug. 16, 1931).—The importance and the difficulties of the problem of the thickening of the waste liquors in pulp mills are discussed and various methods for the solution of this problem are described.—J. F. O.

Treating Soda Black Liquor. Linn Bradley and Edward P. McKeefe assignors to Bradley-McKeefe Corp. U. S. pat. 1,821,138 (Sept. 1, 1931).—An aluminum compound which is capable of combining with free caustic alkali is added to form alkali metal aluminate, and aluminum hydroxide is precipitated, substantially free from inorganic impurities, from the remaining solution.—A. P.-C.

Process of Wood Digestion. Herman B. Kipper. U. S. pat. 1,820,276 (Aug. 25 ,1931).—The raw material and chemicals such as caustic soda, sodium carbonate and sodium sulphide in aqueous solution, as commonly used for digestion, are placed in a vessel; this is followed by a continuous cutting through the constituents in an instantaneous rectilinear direction and continuous heating of the materials in the vessel.—A. P.-C.

A New Sulphur Burner*

By Raymond F. Bacon[1]

It is the purpose of this paper to describe a sulphur burner which has been developed in the research department of the Texas Gulf Sulphur Company.

This burner has seemed to offer enough advantages as an efficient machine for making sulphur dioxide from sulphur that it has been decided to make it available to the pulp and paper industry. While this burner has been rather thoroughly tested under many different conditions simply as a machine for burning sulphur it has not as yet been installed for a practical test in any sulphite pulp mill, although it is hoped that one or two such installations will be made soon. The burner which has been under test had a maximum capacity of about 13 tons of sulphur in 24 hours, and the advantages claimed for it are as follows:

By its use a gas strength of 19 to 20 per cent sulphur dioxide can be produced and maintained.

No sulphur trioxide is formed.

No sublimation occurs.

It is flexible, burning 6 to 12 tons of sulphur daily, at the same high gas strength.

It can be started after a Sunday shutdown and gas brought to full strength in thirty to forty-five minutes.

It can be started when cold and gas brought to full strength in one and one-half to two hours.

Shut downs are almost instantaneous.

The regulation is simple.

Gas can be delivered to the towers under pressure, eliminating any fan operating in a corrosive atmosphere.

Conversion of sulphur to sulphur dioxide is 99 to 100 per cent efficient.

The construction cost is small.

Operating costs are low.

A waste heat boiler may be installed if desired.

The complete burner is shown in Figs. 1 and 2, and the equipment consists of: A. Steam jacketed nozzle burner, B. Combustion chamber, C. Sulphur melting tank, D. Centrifugal pump equipped with a steam turbine, E. Low pressure blower driven by a variable speed 10 H.P. motor, F. SO_2 gas recorder with automatic control, and G. Compressor or a supply of compressed air.

Steam Jacketed Burner

The burner (Fig. 3) is made in two parts, on removable, and the other fixed. The removable part of the burner consists of a nozzle and pipe connections, the nozzle itself being constructed from a bar of Alleghany metal approximately 1¾ inches in diameter and 2½ inches in length. At the inlet end it is drilled and tapped to take a ⅜ inch air pipe, while at the combustion end it is tapped to take a tapered plug. Spiral grooves are cut on the outside at the plug end and the molten sulphur is forced into the combustion chamber through these grooves. The plug which is machined with similar spiral grooves, screws into the nozzle. Compressed air admitted through the ⅜ inch pipe is forced through holes in the plug and discharges into the combustion chamber after passing through the grooves, striking and atomizing the molten sulphur issuing from the outside grooves.

The fixed part of the burner consists of a short length (about thirty-six inches) of three inch pipe, which is fastened by a flange to the combustion chamber. Inside of the three inch pipe is a two inch pipe of slightly greater length. The three inch pipe is welded to the two inch pipe at both ends and the annular space between the two is supplied with steam which keeps the sulphur hot and at the same time acts as a cooling jacket to carry off heat from the nozzle. The molten sulphur is fed to the nozzle through the two inch pipe. Running through the two inch pipe and screwed into the nozzle is the ⅜ inch air pipe, which supplies the compressed air to atomize the sulphur.

The ⅜ inch pipe and nozzle may be removed as a unit in case it is necessary to clean the spiral grooves. A duplicate unit is provided so that if necessary, replacement can be made, the time required being in the neighborhood of two or three minutes.

Combustion Chamber

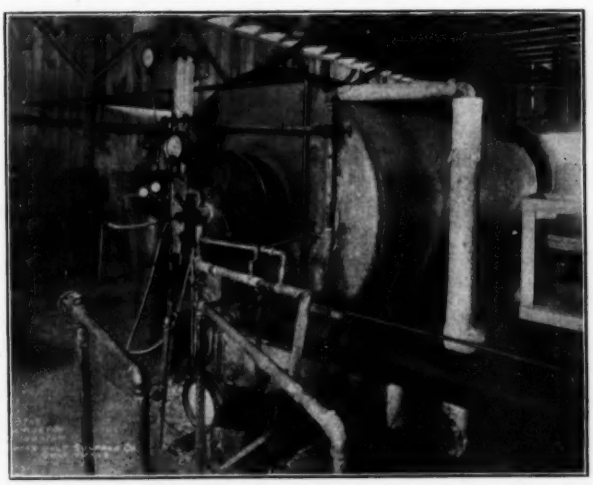
The combustion chamber consists of a horizontal welded ⅜ inch steel plate cylinder 8 feet in diameter and 15 feet long. The shell is lined with 2 layers of 1/16 inch sheet asbestos followed by two layers of fire brick suitable for temperatures as high as 1800 deg. C. Two solid baffles and two partitions of checkers work serve to break up the stream of gas and insure thorough mixing.

Melting Tank

The melting tank, for a unit burning 12 to 13 tons of sulphur, should be approximately 4 feet x 4 feet x 20 feet long. It is constructed of welded ¼ inch steel plate supported at the top by three ½ inch steel straps and covered with three hinged plates of ¼ inch steel. On the inside are three baffles of ⅜ inch steel, two extending up and one down. The tank is sunk in a concrete pit in the floor below the level of the burner. Steam coils are placed on the sides and bottom of the tank.

Sulphur Pump

The pump used is of the centrifugal type constructed of non-corrosive metal. It is mounted on a vertical shaft driven by a steam turbine equipped with a throttling device to give a wide range of speed.



General Front View of Burner Installation

Blower

The blower supplying combustion air is of the Sirocco type having a capacity of 1500 cubic feet per minute against a pressure of 2 inches of water, driven by a 10 h.p. variable speed motor.

Gas Recorder and Automatic Control

The automatic control is operated by a Leeds & Northrup gas recorder. Contacts on the gas analyzer operate a small motor which in turn opens or shuts a steam regulating valve on the sulphur pump.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 15-18, 1932.
Contribution of the TAPPI equipment committee.

[1] Consulting engineer, Texas Gulf Sulphur Company, 75 East 45th St., New York, N. Y. (TAPPI Contributing Member).

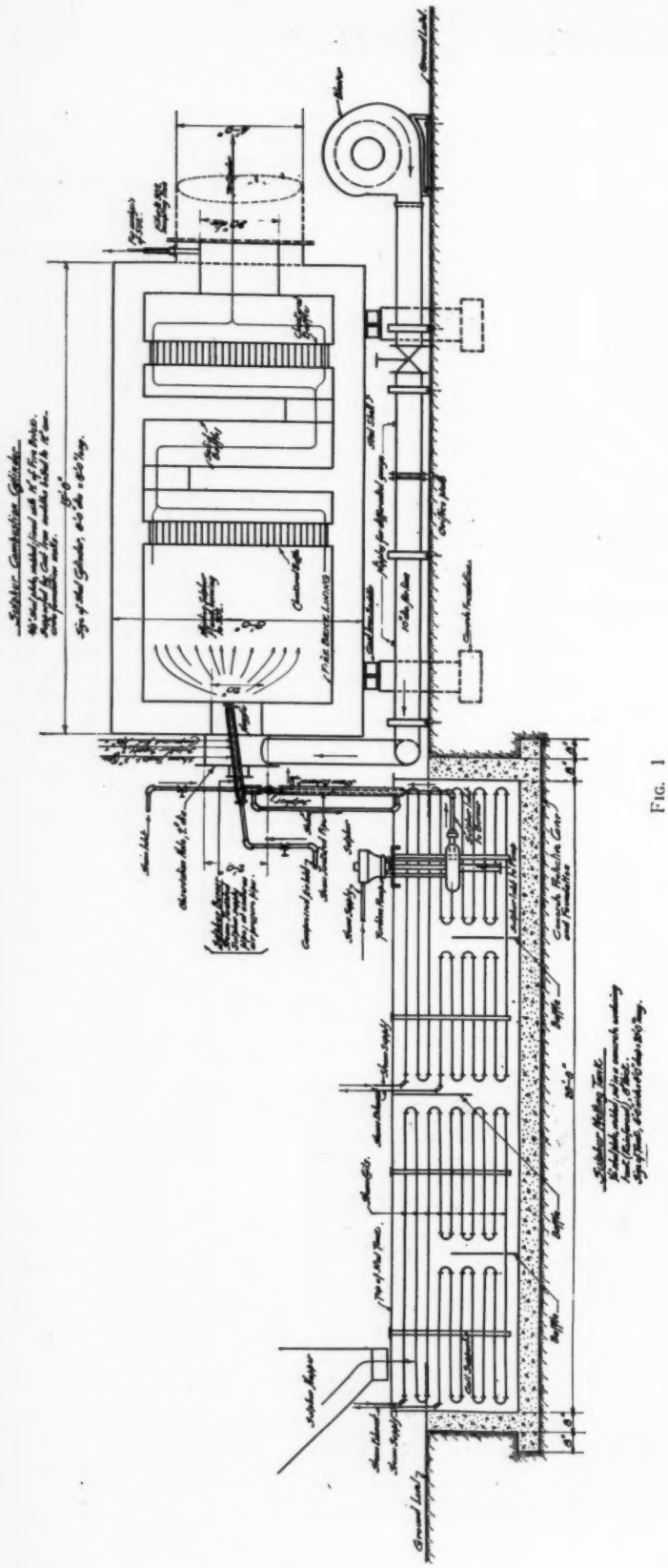


FIG. 1

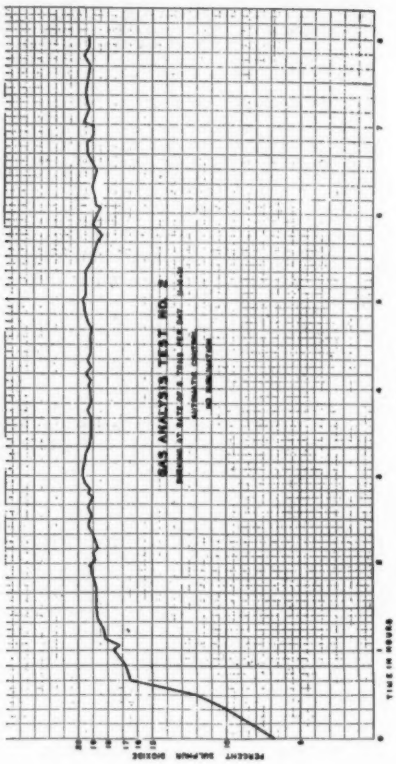


FIG. 5

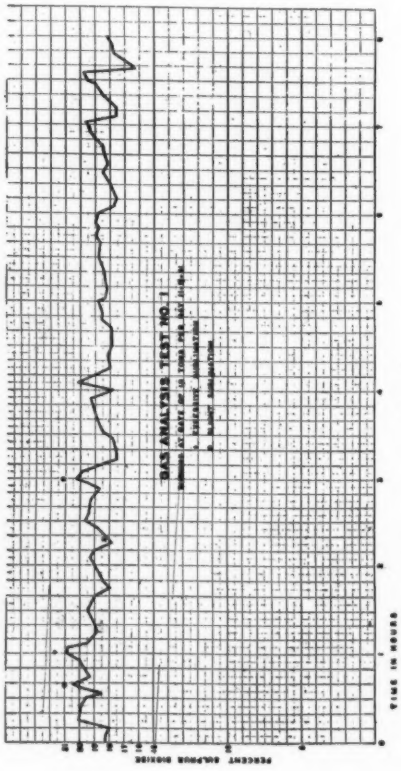


FIG. 4

FIG. 4

FIG. 5

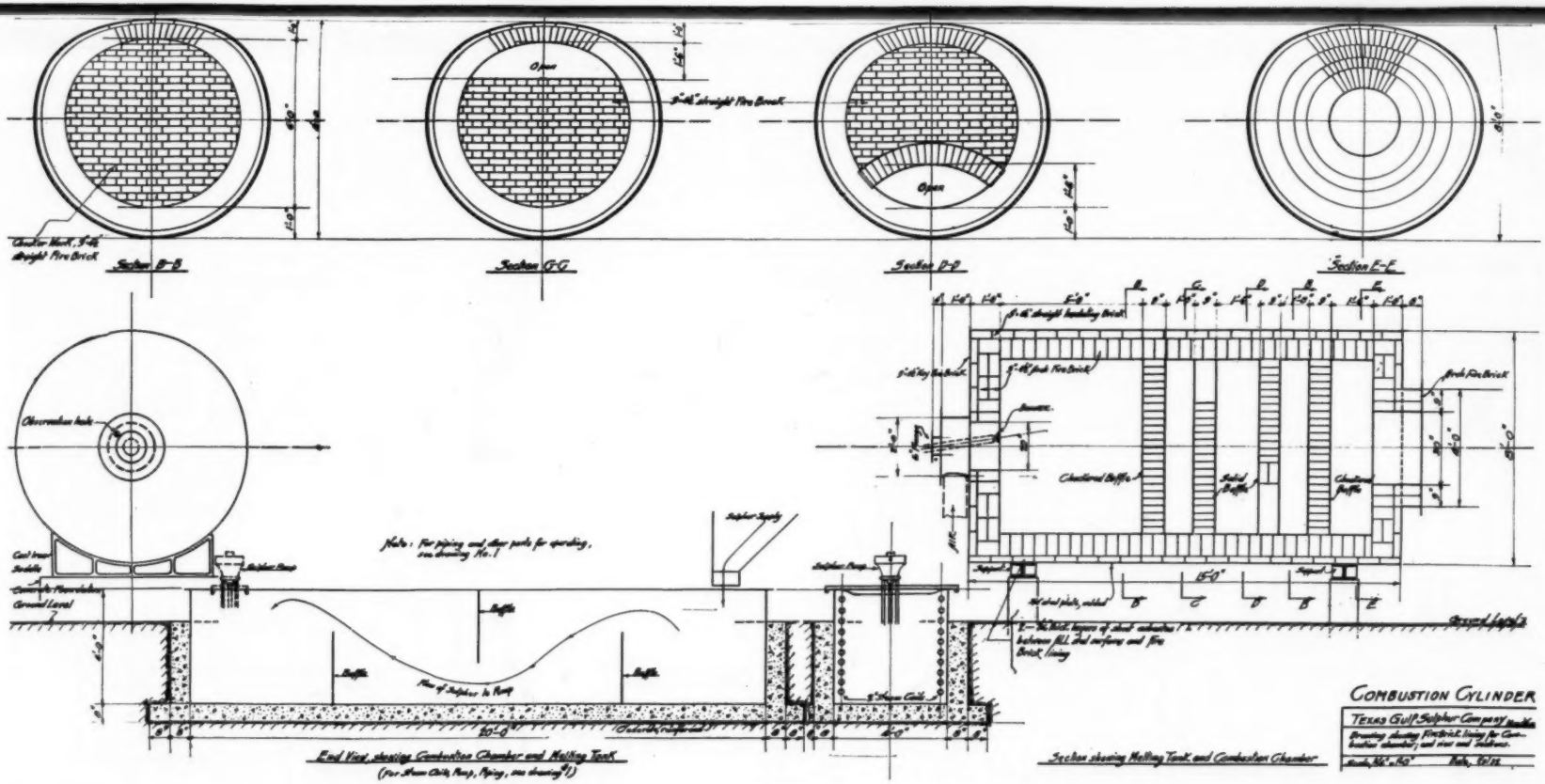

Section B-B
Section C-C
Section D-D
Section E-E
Observation hole
Note: For piping and other parts for operating, see drawing No. 1
Baffle
Flow of Sulphur to Pump
Steam Coils
End View showing Combustion Chamber and Melting Tank
(For Steam Coils, Pump, Piping, see drawing #1)
Section showing Melting Tank and Combustion Chamber
COMBUSTION CYLINDER
TEXAS GULF SULPHUR COMPANY

FIG. 2

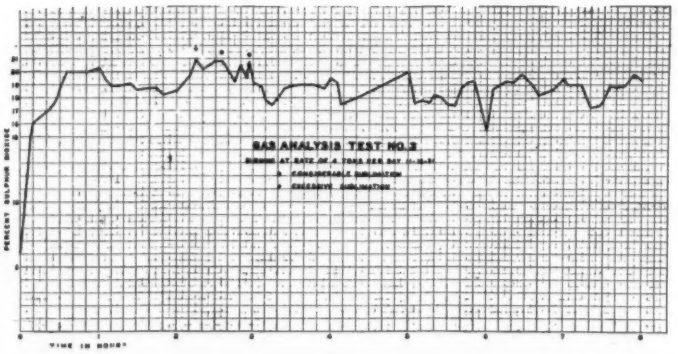


FIG. 6

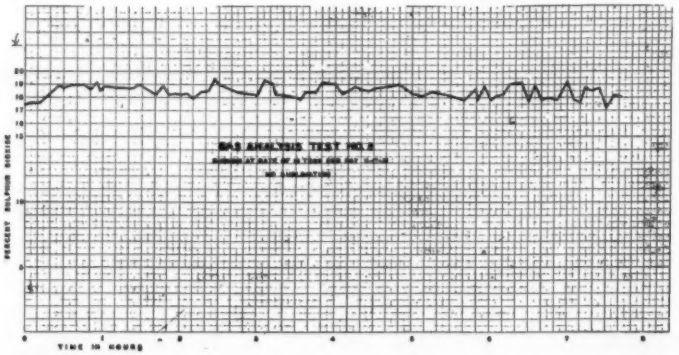


FIG. 7

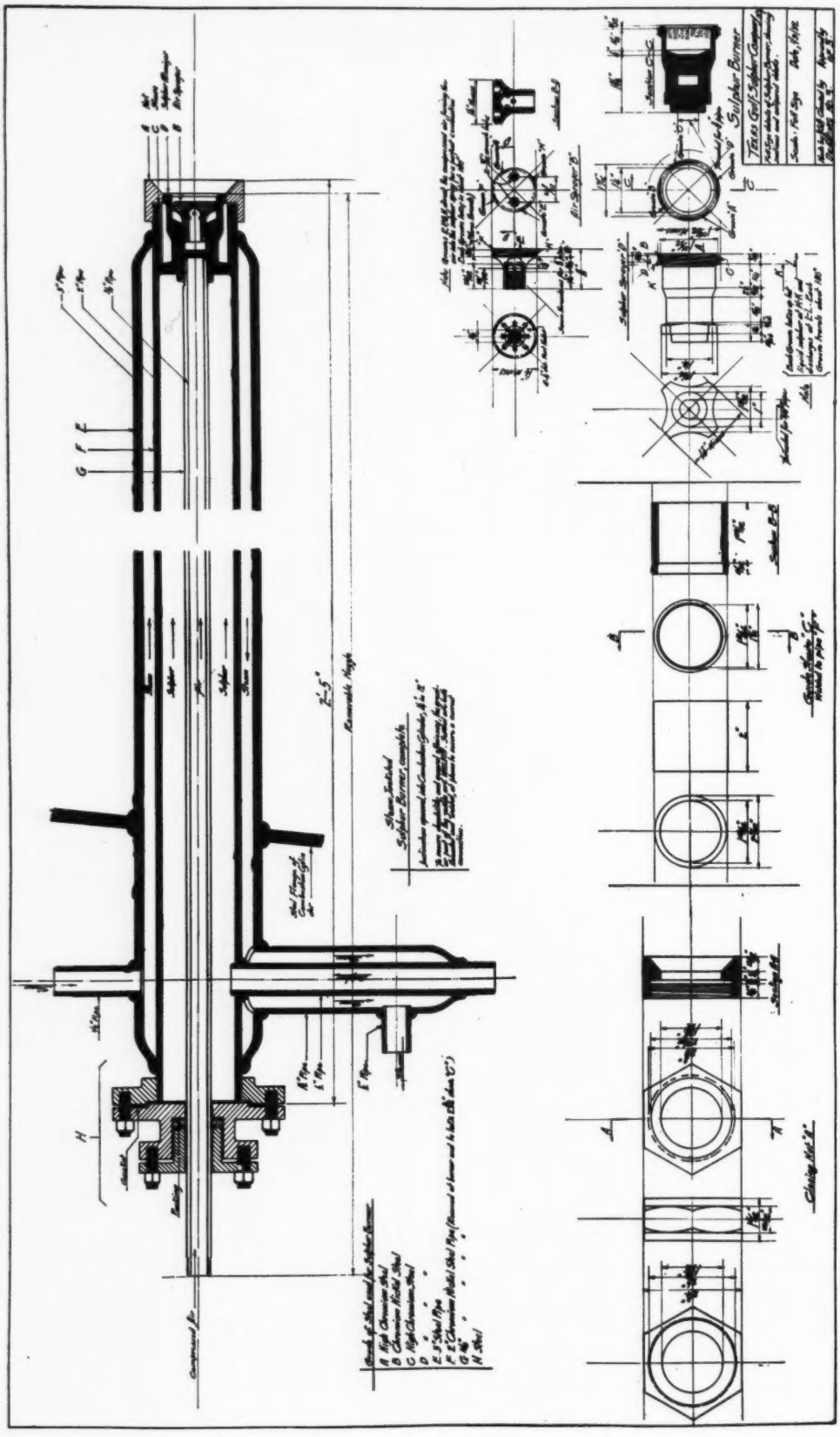


FIG. 3

Compressed Air or Compressor

A source of compressed air or a compressor capable of supplying 25 to 30 cubic feet of free air per minute at 100 pounds pressure.

Operation

Sulphur enters at one end of the melting tank, and on melting flows over and under baffles, thus giving ample time for the sulphur to liquefy and any solid impurities to settle before reaching the pump. As the temperature of the molten sulphur is in excess of 140 deg. C. all moisture is evaporated before reaching the pump. The steam in the coils is maintained at a temperature of 148 to 170 deg. C. (50 to 100 pounds pressure) to prevent the sulphur becoming viscous. The foot of the pump is in molten sulphur and the pipe leading to the burner steam jacketed and lagged. As the burner is placed in the combustion chamber at a slight angle and the melting tank is below the level of the burner, on a shut down, the sulphur drains back into the melting tank, thus preventing plugging. The only part which can plug is the nozzle.

The centrifugal pump forces molten sulphur from the melting tank through a short steam jacketed pipe into the burner. The molten sulphur passes in the annular space between the two inch and ⅜ inch pipes, and through spiral grooves, into the combustion chamber in the form of a whirling

spray. Compressed air at 90 to 100 pounds pressure passes through the ⅜ inch pipe and the worm grooves of the nozzle plug, meeting and atomizing the sprayed sulphur in the front of the nozzle.

Combustion Air

Additional air for complete combustion enters the chamber at the burner end and under normal operating conditions has a pressure of about two inches of water. Both the amount and pressure of the air delivered, however, can be varied at will within a wide range. The volume of air is measured by use of a standardized orifice and manometer.

While most of the combustion of sulphur takes place in the zone around the nozzle, to ensure complete mixing of the gases and thus avoid sublimation, the gases are passed through two checker work partitions and around two baffles in the combustion chamber. The first checker work is about 5 feet from the nozzle and the second 1½ feet in from the exit duct with the two baffles in between. The temperature of the exit gas when burning at the rate of 12 tons per day is around 1200 deg. C. The concentration of gas is maintained within one per cent (19 to 20) by means of the automatic control.

Method of Procedure After Long Shutdown

The operation of the burner is simple. To put in operation after a long shut down with everything cold, the sulphur pump is started and the compressed air valve opened. The whirling spray of sulphur from the nozzle is ignited with a stick saturated with kerosene and inserted through a peep hole alongside of the burner. The blower for the combustion air is then started with the air set for the desired rate of burning by aid of the manometer. The concentration of gas is then raised gradually by regulating the steam on the sulphur pump by hand. For the first 45 minutes considerable attention is required to avoid sublimation but after this period the pump is operated by the automatic control and little attention is necessary. The time required to reach normal concentration is from 1½ to 2 hours.

Starting After a Sunday Shutdown

After a Sunday shutdown (say 32 hours) it is only necessary to start the sulphur pump, compressed air, and blower as the temperature of the combustion chamber (about 500 deg. C.) will be sufficient to ignite the sulphur. The gas concentration can be raised quite rapidly to 19 to 20 per cent that is, in from 30 to 45 minutes without sublimation occurring.

To shut down, the steam on the pump is turned off, the compressed air valve closed, and after a few minutes the blower stopped. The molten sulphur drains from the nozzle and pipe back into the melting tank.

High Per Cent Conversion of Sulphur to Dioxide

As a result of the flexibility of the burner in regard to quick starting and stopping and low losses from sublimation and sulphur trioxide, the conversion of sulphur to sulphur dioxide has been found from numerous tests to be around 99.5 per cent. This is approximately 5 per cent higher than is obtained from the burners of the type in general use in the pulp industry.

The approximate cost of installation has been estimated at about $3500. The cost of operation per day has been estimated at about $2.50 per twenty-four hours.

This cost of operation obviously includes no labor cost, as with the automatic control the burner requires virtually no attention, and it is thought probable that the little supervision it does require would be part of the duties of someone else in the sulphite plant. Labor would also be required to the extent of keeping the melting tank supplied with sulphur. Experience has shown that if the sulphur is clean the nozzle does not become stopped up. In case it does become stopped up the old nozzle can be removed and a new one put in its place in about three minutes.

An idea of the performance of the burner is shown in Figs. 4, 5, 6 and 7, which give the actual percentage of sulphur dioxide during certain runs. The sulphur dioxide content of the gas was checked every five minutes by gas analyses, while sulphur trioxide although tested for once every hour, always gave negative results, and continuous tests were made for sublimed sulphur. The reason that this burner does not give any sulphur trioxide is because of the high temperature of combustion which is beyond the favorable equilibrium range for the formation of sulphur trioxide, and because there is virtually no oxygen left in the gases to allow any sulphur trioxide to be formed when the gases cool to a temperature which would be favorable for the formation of sulphur trioxide. Up to a percentage of 20.2 per cent sulphur dioxide no sublimed sulphur is formed. If it is desired to go higher than that percentage of sulphur dioxide, the automatic control is at the present time not sensitive enough to prevent the possibility of the gas at times getting up toward 21 per cent, and there is a liability to form some sublimed sulphur.

Flobility and Springback of Pulp and Board*

By Roger B. Brown[1]

Until the recent advent of the technical men to the paper industry the boss beaterman controlled the condition of the pulp as it went to the paper machines by feeling of the stock with his experienced hands. For years it had been known that the pulp had a softer feel and was more slippery after refining than before. It was also readily apparent that the more refining the pulp had the more reluctant it was to give up its water on being squeezed in the hand. This change in the feel of pulp on being refined is the most noticeable one, even to a novice, and served in its day as a means of control until better methods were available.

A decade or more ago the more progressive mills replaced the sense of touch by a mechanical device which was much more accurate and still more valuable because it gave a numerical result which could be duplicated by anyone after proper instructions. This instrument is known as a slowness or freeness tester.

Most pulp is now refined to a given freeness and this latter characteristic is usually the only physical test made on the wet pulp. It is of more than passing interest to know the freeness of a pulp because it influences the speed at which paper can be made from a stock. Aside from this its only value is its general indication of the properties of the finished sheet. This latter is true, however, only where the same quality of pulp has been treated previously in the same way and the correlation of freeness with sheet characteristics has been made.

Flobility

Two new tests for evaluating pulp without making dry sheets have been devised. Both tests are simple, can be made quickly and easily by inexperienced non-technical men, and both give results which are expressed numerically. They had to be developed and used to obtain more control of the physical characteristics of pulp in the wet state. Such was the case several years ago when the author was confronted with a three per cent consistency pulp

*To be presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 15-18, 1932. Send written discussion to R. G. Macdonald, 370 Lexington Ave., New York, N. Y.
Contribution of the TAPPI pulp testing committee.

[1]Member TAPPI, chief chemical engineer with D. Manson Sutherland, Jr., Trenton, N. J.

which would not flow as the previous pulps of this consistency did. In fact it acted like a 6 per cent consistency stock. Yet it came from the same sources as previous lots which gave no trouble and like them was practically unrefined. The freeness of both pulps was nearly identical.

All paper and board making processes utilize the flow characteristic of pulp and yet the only control over these qualities is obtained by varying the dilution of the stock. When a process is vitally dependent on the flowing properties of a pulp at a given density some quick indication of these properties becomes important.

It was under these conditions that the following test was devised and it was but natural that it take the name of *flobility*.

Measurement of Flobility

One liter of pulp suspension is prepared containing one (1) gram of pulp (bone dry basis). The suspension at 70 deg. F. is subjected while being shaken gently to a vacuum of at least fifteen (15) inches of mercury for a minute, poured gently into a liter graduated cylinder and allowed to stand fifteen (15) minutes. At the end of this time the volume in cubic centimeters occupied by the fibers is noted. This reading has been adopted as the numerical measure of the flobility of the pulp.

The air must be removed almost completely from the suspension or some of the fibers may float to the surface. Original studies of flobility were made by boiling the suspension to remove air. This latter method has been found necessary in course groundwood pulps for thermal insulation boards but it was abandoned for general use to save time involved in heating and cooling the suspension.

The standard liter graduate which is approximately 6 cm. inside diameter is recommended. When the flobility is over 900 cc. it is advisable to use one-half gram per liter and multiply the reading by two.

Significance of Flobility

Since the test was first made it has been applied to nearly every paper and board making fiber and to most of these fibers in more than one state of refinement. In this way it has come to

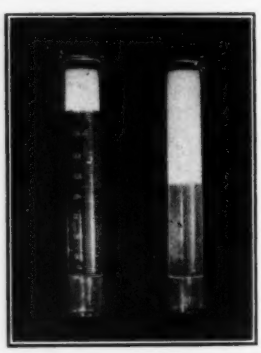


FIG. 1.
View showing volume occupied by pulp after refining (left) compared with volume before refining (right).

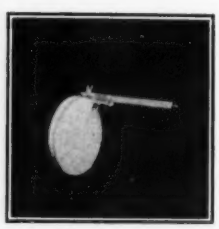


FIG. 4.
View showing method of measuring thickness of pulp mat after removing from press.

have a significance far greater than merely an indicator of flowing characteristics. It is an indication of the wet strength or felting power of fibers. It is a yard stick by which the suitability of a pulp can be tested without actually turning the pulp into paper.

The flobility of spruce chips which have been shredded to the size of coarse edger sawdust by a swing hammer mill is low, being about 10. Their freeness is high. If you try to refine this material into paper making fiber you will find it is not difficult to bring its freeness to that of No. 1 groundwood which is approximately 250 cc. by the Williams Model B freeness tester. But this 250 freeness material will probably resemble the product desired in only this one respect of drainage rate. Both its wet and dry strength will be nearly nil and the ease with which it could be handled on paper making machines would leave much to be desired. If we compare the flobility of this refined pulp with that of No. 1 groundwood we find the latter to approximate 200 and the former is but 50 or so.

Conversely, if we refine the sawdust in such a way that when the freeness is 250 and the flobility is in the neighborhood of 200

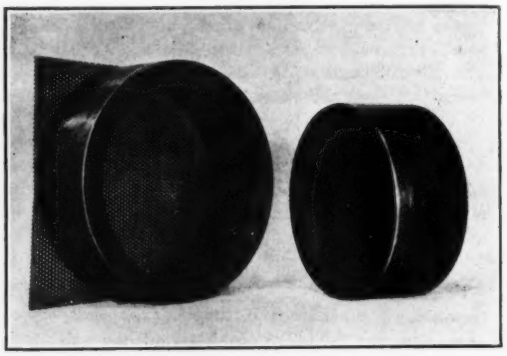


FIG. 2.
View of ring, plunger and screen used for portable mould.

we find that we have strength either when wet or dry that is comparable with that of No. 1 groundwood.

This is a striking illustration of the need for determining physical properties of wet pulp other than freeness.

The same thing applies equally well with the chemical fibers such as sulphite, kraft, and soda. One hard beating chemical pulp with which the author has worked had a flobility when unrefined of 270. In practice it was being refined to 350 flobility. A much better paper was produced from the original pulp when it was refined to a flobility of 500. It seems reasonable that if mechanical pulp must increase in flobility on being properly refined that other fibers should also, yet a great deal of chemical pulp is commercially refined in some mills to have a lower flobility than the unrefined stock, thus failing to develop maximum potential qualities existing in the original unrefined pulp.

Not long ago one of our clients had some mechanical pulp of flobility 150 and freeness 800 refined by two different processes and the pulp was sent to us for comparison. Both pulps were tested for freeness and flobility and each found to be practically 450 in freeness but one had a flobility of 270 compared with 80 for the other. Both refined pulps were examined microscopically and just as much difference was evident as their flobilities implied. The final test of sheet characteristics was made and the pulp of high flobility had much more strength both in the wet condition and when dry.

Under the microscope the pulp of low flobility showed a noticeably shorter fiber length and the ends of the fibers looked as if they had been cut off sharply. The high flobility stock, however, showed a long thin fiber structure with well broomed ends and side walls.

Factors Affecting Flobility

Fiber length has a considerable effect on flobility but the ratio of length to width apparently plays a greater part. A sulphite pulp was refined until its fibers were all turned into fibrillae whose length was such that a 0.4 per cent suspension passed through a plate having 0.020 inch diameter perforations just as if no cellulosic matter were present. This data was obtained when we were endeavoring to get freeness under ordinary conditions. The flobility of this fibrillae suspension was too high to be measured in the usual way. A suspension containing only one-quarter

of a gram per liter gave a reading of 530 at the end of fifteen minutes. In sheet form this pulp had a bursting strength of 104 per cent (24 × 36 — 480) basis and exceptionally high tear and folding characteristics for a sheet which shrunk 35 per cent in area on drying without restraint.

In most refiners there is a combination of crosswise cutting and fibrillization, the former tending to reduce the flobility, the latter tending to raise it. The flobility of the refined pulp is the resultant of these two actions superimposed upon the flobility of the unrefined stock. It is possible to regulate the amount of each of these actions and thus control the flobility of the finished pulp.

When the full significance of this property of a pulp suspension is understood much previously uncorrelated information takes on a clearer meaning.

Effect of Flobility on Consistency Regulators and Sheet Formation

There are a number of consistency regulators on the market and nearly all are influenced not only by the density but also by the flobility of the suspension. A high density and low flobility stock affect them in the same way as a pulp of low density and high flobility. There is to the author's knowledge no device on the market at present for determining flobility continuously nor any

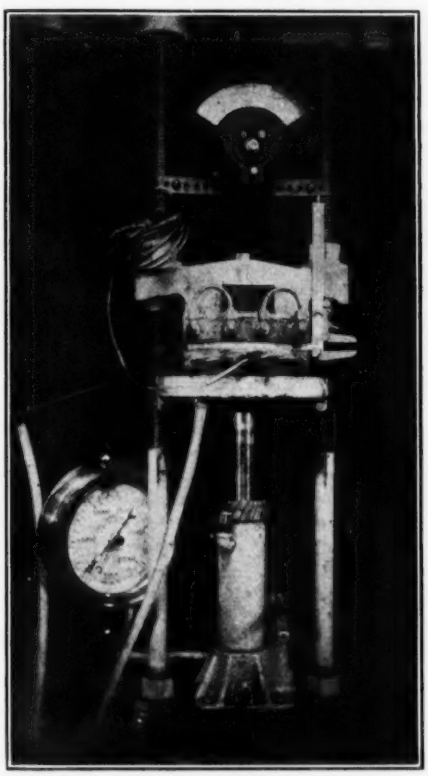


FIG. 3.
Showing method of measuring thickness of pulp mat while in press.

device which automatically corrects the readings of consistency regulators for changes in flobility.

The boss beaterman should be greatly interested in the flobility of the pulp he turns out as well as the papermaker since pulp *flows* onto his wires. The fiber distribution in the finished sheet, whether well closed or wild, is influenced by the flobility of the pulp in the head box.

Springback As a Pulp Characteristic

There is still another physical characteristic of pulp which markedly affects the behavior of fibers both in dilute suspension as well as in the form of a wet sheet. I have reference to their resiliency or, as it is more familiarly called by our organization, their springback. Anyone who has ever squeezed unrefined pulp in his hand has noticed that when the pressure was relieved the mat of fibers increased in volume to such an extent that it readily absorbed the free water within reach. Because this property has never been previously determined numerically its importance has

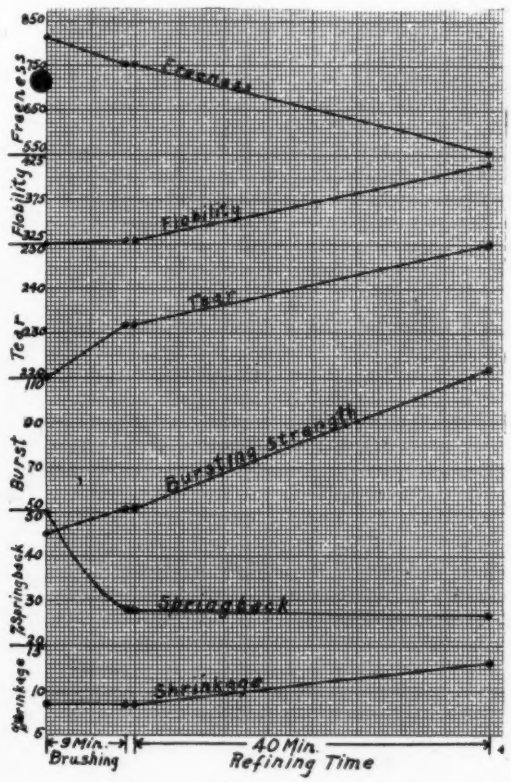


FIG. 5.
Effect of brushing followed by refining on characteristics of kraft pulp.

been overlooked. The measurement of this characteristic is as easy as its name suggests. The following procedure has been used unchanged for several years.

Measurement of Springback

A mat of pulp about 1 inch thick and six inches diameter is formed in a sheet mould and by vacuum under the screen the moisture of the pulp is reduced to less than 85 per cent. The mat is removed from the sheet mould and placed in a ring. This metal ring is 6 inches inside diameter, 7½ inches outside diameter and 2 inches high. The ring and sheet of pulp are placed on a piece of Fourdrinier wire attached to a perforated brass plate which is 7½ inches in diameter and 1/16 inch thick. A metal plunger 2¼ inches high and 0.015 inches less in diameter than the inside of the ring is placed on top of the pulp mat. The whole unit is placed in a hydraulic press and subjected to a pressure corresponding to 100 pounds per square inch on the pulp until there is no further appreciable decrease in volume. The pulp sheet is removed from the portable mould and pressed at 70 deg. F. between the 6 inch square platens of a hydraulic press for 60 seconds at a pressure corresponding to 125 pounds per square inch on the pulp. The average thickness of the mat is obtained quickly to the nearest tenth of a millimeter by readings obtained with an inside vernier caliper at four points around the press platens. The pressure is immediately released, the pulp removed from the press,

and 60 seconds after removal of the pressure its average thickness is again measured to the nearest tenth of a millimeter with an outside vernier caliper. The springback is calculated as a percentage of the thickness while under pressure thus:

$$\frac{(A \text{ minus } B) \times 100}{B} = \text{Per cent springback}$$

where
A = Thickness after pressure is relieved.
B = Thickness while under pressure.

The thickness while under pressure should preferably be not less than six millimeters in order to insure sufficient accuracy in the final result. The pulp sheet should not be measured till it has been under full pressure one minute since it takes some time to reach minimum thickness. The readings after the pressure is relieved are started 50 seconds after this operation since it takes approximately 20 seconds to make the four readings. Some pulps are still increasing in thickness four minutes after removal from the press, but the major increase in all cases occurs in the first minute.

A combination inside and outside vernier caliper is obtainable from the larger laboratory supply houses. The portable pulp mould will have to be made specially to fit the sheet mould used. Pulps which are sufficiently free draining and of such good felting qualities as not to spread measurably under the test pressure need not be primarily pressed in a portable mould. When primary pressing is not used no correction is necessary in calculating the springback.

Effect of Refining on Springback

The springback of pulps of various kinds varies from as low as 7 per cent to as high as 150 per cent in the author's experience. As a rule refining decreases the springback of any given stock although the rate of loss of springback varies greatly with the type of refiner used and the pulp being refined.

A coarse grade of groundwood screenings has shown the following changes on being refined in different ways and then processed similarly.

TABLE I

	Unrefined	Refined by A	Refined by B
Freeness	800	300	300
Springback	100%	63%	25%
Relative strength of sheet	8%	15%	35%

In Table I refiner A would not have reduced the springback to less than 50 per cent if the freeness had been lowered to 100. The springback finds reflection in the strength of a sheet since the density for a given basis weight is altered.

Uses for Pulps of High and Low Springback

In some products it is desirable to use stocks of high springback; in others a low springback gives far better results. All sheets which are to be calendered or pressed when practically dry and in which maximum strength is required should have a low springback. Otherwise, the sheet on being calendered or pressed will compact considerably and the internal fiber structure be broken down. Newsprint is an example of a sheet which is in most cases stronger before calendering. Folding endurance can be increased by decreasing the springback of a pulp.

Where a light weight board is required it can most economically be obtained by the use of a high springback pulp. Thermal insulation boards are an example of this type. Some boards now on the market are made from pulps having only 25 per cent springback; others are prepared from stock of 100 per cent springback. This difference is shown in the cost of drying the products. A board made of low springback pulp goes to the drier containing practically four pounds of water per pound of fiber to make when finished as light a sheet as that obtained from a high springback pulp which may lose in drying but two pounds of water per pound of fiber.

Springback As a Refining Control

In preparing some fibers, notably bagasse for boards, it is much more satisfactory to refine to a given springback than to a given freeness. In this case the springback varies rather uniformly and over a wider range for a given amount of refining than does the freeness and therefore for this as well as other reasons it is a more sensitive indicator of the degree of refining. Since the springback test, unlike most tests, requires no definite weight of stock accurate results are more quickly obtained.

Correlation With Other Properties

Springback is a method of securing numerical data concerning other characteristics of pulp with which it shows a close correlation and for which no other direct simple comparative test is available. Unrefined pulp is much harder to form into uniform well closed sheets than the same fibers after slight mechanical treatment. A harsh-beating kraft comes to mind which was particularly unruly as received. After a very mild brushing for nine minutes in a specially equipped beater it was vastly improved in sheet making qualities, and yet it had apparently not been "hydrated" nor cut since its shrinkage and flobility were identical within experimental error though it was measurably slower draining and had increased in bursting strength by 30 per cent. A tabulation of the characteristics before and after brushing and after refining is worthy of study.

TABLE II

	Unrefined	Brushed 9 min.	Refined
Springback	50%	28%	27%
Freeness	815	755	555
Flobility	325	330	415
Shrinkage (in area)	8.6%	8.6%	13.1%
Bursting strength	40%	52%	114%
Tearing strength	220%	232%	250%

In Table II the data shows that brushing has caused the greatest change in springback. The difference in ease of forming uniform well closed sheets of the brushed and the unrefined pulps was at least as great as the change in springback. The refined pulp gives a still more uniformly closed sheet than the brushed stock as the increase in flobility suggests. The loss in springback allows the mat of fibers in the freeness tester to pack tighter under the head of water and hence the brushed stock is slower draining. The increase in bursting strength on brushing is believed to be due solely to the higher and more uniform density obtainable in the sheet. The sheet making and testing procedure was identical for all pulps.

When examined with a microscope the brushed fibers showed an absence of fibrillae and in fact looked smoother than the unrefined stock. One quarter inch thick sheets of both pulps were pressed in a mould under 240 pounds per square inch for the same length of time and each then found to contain exactly 58.5 per cent water, another indication of no change in "hydration."

The springback of chemical pulps decreases rapidly at first with even mild treatment of the proper kind but the curve flattens out rapidly as the data in the last column indicate.

This experiment suggests that even though springback and flobility are separate and independent properties of pulp they may indicate when considered together more than either one alone.

Conclusion

The foregoing information represents a few illustrations of the need for more data than has been previously available concerning the changes in physical characteristics of pulp as it is being refined. It shows how tests were developed to account for the heretofore unexplainable behavior of fibers under certain conditions. With this new data at hand the word refining as applied to pulp takes on a new meaning. The specifications of a refined pulp can now be made much more definite and the characteristics of the finished sheet more closely controlled. It is suggested that these tests be tried by other investigators in order to accumulate data from as many different sources as possible.

Ink Resistance of Printing Papers*

By B. L. Wehmhoff, Chairman[1]

The work on the subcommittee on ink resistance of printing pages of TAPPI during the year has been confined to that conducted in the laboratory of the Government Printing Office, since the chairman was unable to devote the time required to get in touch with the committee members and draft a definite program. A meeting of the committee will be called during this convention for the purpose of outlining the work to be done during the next year, and an invitation is extended to all interested to attend and offer their suggestions regardless of whether they are members of the committee or not.

Research on news print and news ink is being conducted by the Government Printing Office and the mechanical department of the American Newspaper Publishers Association under the research associate plan. This report covers the work done during the past year. It covers news ink and news print only, but the findings have some bearing on other printing papers, especially mimeograph and book papers.

A complete report of the work done up to May 15, 1931 is given in Government Printing Office Technical Bulletin No. 13, and was presented at the Mechanical Conference of the American Newspaper Publishers Association in June, 1931. Copies of this report have been sent all committee members. Anyone interested may obtain copies upon request to the Government Printing Office. Following is a resume of the results covered in that report.

"Strike Through"

The following factors might cause or influence "strike through": 1. Color of the oil used. 2. Consistency of the ink, 3. Size of pigment particles and their agglomeration or dispersion, 4. The character of the paper, 5. The amount of ink used for impression, 6. Temperature of ink and paper at time of impression, 7. Length of time of impression, 8. Presence of rosin or rosin oils, and 9. Use of toners in the ink.

Progress has been made in the study of some of these factors. It developed that no exact dividing line could be drawn between "strike through" and "show through," since in many cases the causes and even the final effect was the same.

(1) Considerable research was done on the effect of the color of the oil in causing "strike through." It was found that the staining of the paper is not necessarily caused by the dark color of the oils, but that it is due to a resinous pitchy material commonly found in dark asphaltic base oils.

A search of technical literature was made to determine the methods of refining commercial asphaltic oils and the reasons for each step in the process. Two procedures, sulphuric-acid treatment and filtration through fuller's earth, had as their purpose the removal of pitchy asphaltic material from the oil and also the decolorization of the oils.

Several dark-colored news-ink oils were treated by the sulphur acid procedure, which did not decolorize the oils to the desired extent. A portion of each oil was further treated by filtering it through fuller's earth. The commercial oil as received was also filtered in the same manner. This treatment successfully removed the staining constituent and the color in all cases.

Tests on news inks made from the three sets of treated oils showed that the oil treated with the sulphuric acid alone, though still dark colored, had the staining constituent removed to such an extent that it caused very little "strike through." Inks made from the oils treated with fuller's earth likewise showed practically no "strike through," but it was found that this procedure had also removed those constituents of the oil that gave it the length and flow necessary for satisfactory working properties on the presses.

Our laboratory tests indicate that use of similarly treated oils in the manufacture of news inks will eliminate the bugaboo of "strike through" to a considerable extent without excessive increase in the cost of the ink.

Plant tests leading to the commercial production of "stainless" oils are now being conducted by some of the leading oil refiners, and it is hoped that definite results will be obtained in the near future. As soon as the oils are available commercially inks will be made from them and given practical tests in newspaper printing. Arrangements have already been made for this part of the program.

Consistency of the ink.—Definite conclusions can not be drawn as to the effect of consistency of the ink on penetration, since there are many factors governing consistency. As stated in our previous report, the amount of grinding affects both consistency and penetration. An ink made with carbon black is of heavier consistency and usually strikes through more than an ink containing the same percentage of lampblack. There is little difference in "strike through" when inks containing the same percentages of different carbon blacks are compared even though their viscosity may vary considerably. With any given pigment and oil the penetration varies inversely with the percentage of pigment (and thus consistency) within the pigment percentage range found in commercial news inks.

Size of pigment particles.—Relatively little work has been done on the effect of size of the pigment particles in influencing "strike through." By means of X-ray diffraction photographs obtained through the courtesy of Dr. S. B. Hendricks of the Fixed Nitrogen Research Laboratory of the Department of Agriculture, it was found that the average particle size of lampblack is greater than that of carbon black. Since the inks made from carbon blacks show more "strike through" than those containing equal percentages of lampblack, these results indicate that finely ground particles permit more oil to penetrate the sheet than do coarser particles.

Character of the paper.—The character of the paper necessarily influences the penetration of the ink. The more porous the sheet, the more oil from the printing will penetrate through it. The more highly is is calendered, the more the paper will resist penetration. Drawout tests on special samples of newsprint indicate that the higher the percentage of ground wood, the less will be the penetration. Under normal conditions both jordaning the stock and adding clay or other filler apparently increase the paper's resistance to ink penetration.

Amount of ink, temperature of ink, and length of time of impression.—Penetration of ink into paper will undoubtedly be increased by using too muck ink, by printing at high temperatures, and by increasing the length of time of impression. No definite data have been obtained on the influence of these factors on "strike through."

Presence of rosin or rosin oils.—The use of the cheaper grades of rosin and rosin oil in inks increases the "strike through" of inks. It has been suggested that this staining may be due to impurities in the rosins themselves rather than to any effect of the resinous material in hastening the passage of the vehicle (oil) in inks as pigments increase the penetration of inks into the paper. these lines to determine whether higher grade rosins and rosin oils have the same effect on news inks.

Use of toners in news ink.—Oil soluble dyestuffs, when used as toners, dissolved in either oleic or linoleic acid or ground into the inks as pigments increase the penetration of inks into the paper. However, it was found that equally satisfactory toning results could be obtained with smaller percentages of the solid dyestuffs

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* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb., 15-18, 1932.

[1] Technical director, Government Printing Office, Washington, D. C. and chairman TAPPI subcommittee on ink resistance of printing papers (paper testing committee).

than if the dyes were first dissolved. The resultant "strike through" would therefore be much less. Water soluble dyes, when added as pigments to the ink, do not increase the penetration noticeably, neither do they have much toning value.

Aside from using an ink which contains a "nonstaining" oil, "strike through" can be controlled to some extent by the amount and kind of toners in the ink. In addition more satisfactory results will be obtained by the use of a closed, soft, flexible sheet of paper of uniform thickness rather than a porous, brittle, or crackly sheet of varying thickness.

"Show Through"

"Show through," which is the term used when printed matter on one side of the sheet is visible on the opposite side, may be due to either the paper or the ink, or both. The paper will allow the ink to "show through" if it is too thin, if it is unusually porous, or has numerous "pinholes" which allow the pigment to penetrate unduly into the sheet, or if the fibers themselves either naturally or through some process of manufacture are more or less transparent. The ink will "show through" at times if made with a thin oil, as such oils penetrate the sheet rapidly and have a tendency to make the paper fibers transparent. Inks with a high toner content tend to "show through" because the dye is dissolved in the oil to a certain extent and is carried into the sheet with it. This causes the blue or violet color of the toner to show up on the opposite side of the sheet. A similar effect occurs when too much ink or too heavy an impression is used. If too much ink is used the absorption of the excess oil causes transparency, and if too much impression is used the pigment itself may be forced far enough into the sheet to be partially visible from the opposite side. The effect of some of these factors was discussed under "strike through" and need not be repeated here.

Since "show through" is due principally to the transparency of the paper, either inherent or caused by the ink, efforts were made to obtain a method of measurement by which the opacity of different samples of news print could be compared. Different opacimeters were studied, including the instrument developed by the Bureau of Standards, which is used to some extent in the Government Printing Office. It was found that in comparing samples of news print the error was considerable, and in some cases was so great that the results were of little value. This applies only to comparative tests on news print, which is one of the most opaque printing papers.

A simple method of determining comparative opacity was devised in order to overcome the errors and provide a visual record of the results obtained. Four holes, each an inch in diameter and so grouped as to fall within the dimensions of a 4 by 5 inch sheet of photographic paper, were cut in a sheet of black glazed paper. Contact prints were then made through four different samples of news print at one time, giving comparative results on these samples. By exposing the same grade of photographic paper for a definite length of time to a standard light at a fixed distance from the paper comparative results can be obtained on any number of samples. The most transparent sheet will transmit the most light and thus appear darkest in the prints. The prints show not only the relative opacities but the formation of the news print itself. Placing a piece of ground glass or celluloid between the news print paper and the photographic paper, the effect of unevenness caused by wire marks can be eliminated, if desired.

It was found that samples having differences of 1 per cent in opacity as determined by the other instruments showed a marked difference in opacity by this method. Tests were made of news print to which thin coatings of oils had been applied. It was found that the lighter colored oils increased the transparency of the paper, while the darker oils appeared to decrease it. These results were corroborated by other methods of opacity measurement. The oils specially treated by the process previously described did not increase the transparency of paper appreciably. Prints as made can be used as a measure of opacity when compared with prints of papers of known opacity made under the same conditions of exposure and development. They may also be used to determine whether the "show through" is caused by poor paper or improper ink.

This method of opacity measurement is not reliable for use in comparing papers differing more than 7 per cent in opacity. In such cases the point from the least opaque papers will appear as a solid black. The opacity of news print should be not less than 90 per cent as measured by the Bureau of Standards opacimeter.

"Flying Ink"

The following possible causes of "flying ink" have been suggested by various printers and ink experts: 1. High speed of the presses, 2. Lack of humidity in the pressroom, 3. Improper ventilation of the pressroom, 4. Incorrect pressroom temperature and 5. Incorrect ink—(*a*) Too long and stringy, (*b*) Too short and fluffy.

Carbon Black and Lamp Black as Ink Pigments

The question is occasionally raised as to the relative desirability of carbon black and lamp black as pigment for news inks. As a rule, the price is apparently the deciding factor as to which shall be used.

Disregarding consideration of price, it can not be said definitely that either the one or the other makes the more satisfactory ink. Lamp blacks as a rule have a greater bulk than carbon blacks and for a given pigment percentage make an ink of thinner consistency. Lamp blacks yield duller and grayer inks than carbon black, while carbon-black inks have a glossy black finish. Some publishers prefer the dull finish, claiming that it is less tiring to the eye, while others prefer the glossier appearance, saying that it gives more "snap" to the ink. No simple, accurate, physical or chemical test has been found which will distinguish definitely between lamp black and carbon black in inks, and no method has been developed to determine the respective percentages of each when they are used in the same ink. The best indication of which has been used is an examination of the surface of printed sheets, and this is by no means accurate.

A very simple test will usually distinguish between lamp black and carbon black in the "raw" state. Lamp black will float on water while the major portion of carbon black will sink to the bottom. The reason for this is not known, but the buoyancy of lamp black is believed to be due to the absorption of gas during the process of manufacture. Lamp black, after being extracted from inks, does not show this peculiarity. Because lamp black is dull, the theory was advanced at one time that it was an amorphous or noncrystalline type of carbon, while carbon black because of its shiny, crystal-like appearance was thought to be crystalline. If the theory could be proved, an easy method of distinguishing between the two types of carbon was available, since X-ray photographs would show whether the pigment was crystalline or not, for crystalline materials give a "diffraction pattern" whereas noncrystalline materials do not.

Through the courtesy of Dr. S. B. Hendricks of the Fixed Nitrogen Research Laboratory of the Department of Agriculture, X-ray photographs of both carbon blacks and lamp blacks were made.

These photographs yielded the following information:

1. Both lamp black and carbon black are definitely crystalline in nature.

2. The average size of the particles of lamp black is relatively much larger than that of carbon black.

3. The average particle size of the better grades of carbon black is finer than that of the cheaper grades.

4. There is very little change in the particle size of carbon blacks on grinding into inks, whereas the average particle size of lamp black is considerably reduced by grinding.

Since both blacks are crystalline, X-ray photographs will not definitely distinguish between them except as to particle sizes.

It was not possible to obtain data as to the condition of agglomeration or dispersion of these crystalline particles in the ink itself,

since X-ray photographs can not be made of the pigments when dispersed in an oily medium. To our knowledge no instrument has been devised which will determine the degree of agglomeration or dispersion of pigment particles in the consistency in which they are found in ordinary news inks. However, it is believed that the microscopic method of pigment examination described under methods of analysis will show the state of division of the pigment particles under similar conditions. Future work is planned to determine whether the size of the particle can be used to differentiate between lamp black and carbon black after being ground into ink.

Grinding of News Inks

The effect of the amount of grinding on the viscosity and time for penetration of test news inks has been reported in Government Printing Office technical bulleting No. 9. Further tests were made with a DuNuoy interfacial tensiometer to determine the effect of the amount of grinding on the surface tension of the inks. It was found that the surface tension increased with the amount of grinding in a similar manner to the viscosity, that is, considerable increase on the second grinding with less increase after each of the following grindings.

This led to the conclusion that perhaps samples of commercial news inks which penetrated excessively could be improved by a second grinding. Several samples of such inks were reground, and it was found that in every case save one the viscosity was increased and penetration decreased by the second grinding. The only exception was that of an ink which to our knowledge had been ground twice by the manufacturer and which was the only one which did not show considerable "strike through" when received.

Surface-tension measurements.—Surface-tension measurements were made on commercial and special samples of news inks. In most instances it was found that consistency and surface-tension measurements were closely related.

The following effect of several factors on the surface tension of inks was noted:

1. Within the pigment percentage range of commercial inks, the surface tension increases rapidly with the increasing percentages of pigment, as also does the viscosity.

2. The addition of resins, gums, etc., to the ink increases the surface tension and also the viscosity.

3. The surface tension of inks is increased considerably by the addition of toners and dyestuffs, with the exception of a few instances where both viscosity and surface tension were decreased.

4. With few exceptions the surface tension of inks (alike save for the use of oils of different viscosities) varies directly with the viscosity of the oil used.

It seems probable that with certain restrictions the surface tension measurements could be used as a rapid measurement of the consistency of news inks.

Changes in ink on standing.—Tests made on several commercial news inks six months after manufacture showed that while the rate of penetration had not changed appreciably, the viscosity had decreased considerably. No explanation had been found for this fact, save that the change may be due to some rearrangement of pigment particles in the oil. It was noticed that news inks made in the Government Printing Office usually increased slightly in viscosity during the first few days followed later by a decrease.

Factors Influencing Printing Qualities of Newsprint Paper

A study was started covering the various factors which might influence the printing qualities of news print paper. The results are incomplete, but it is felt that progress has been made.

Among the points considered are the following: 1. Surface of the paper, 2. Pulp composition of the paper—(*a*) Percentage composition, (*b*) Fiber length. 3. Calendering of paper, 4. Volumetric composition of paper, 5. Thickness and compressibility of paper, 6. Sizing and filler in paper and 7. Transparency of the paper.

Measurement of Paper Surface

All methods of surface measurement described in paper literature which did not involve elaborate apparatus, were tried out. Several tentative methods were also evolved, but none of the methods gave satisfactory results.

A simple and clever apparatus for measuring the smoothness of paper surfaces has been designed by Dr. Julius Bekk of the Ullstein Printing Company of Germany. It can also be used to determine the porosity of paper. The first of these was observed last summer in Dr. Bekk's laboratory, at which time information was obtained as to the relationship of the test results to actual printing tests conducted in the Ullstein plant. The instrument apparenly has considerable potential value as a means of measuring the actual smoothness of the printing surface of paper and expressing the measurement in mathematical terms. The Government Printing Office has just obtained one of these testers and comparative tests are now being made with Dr. Bekk and also with a laboratory in Holland to determine the reproducibility of results on different testers. Some work has also been done on news print papers. The difference in finish between different papers and often between the two sides of the same paper can be measured with this tester. It is hoped as a result of this work to establish definite limits of smoothness for news print and other

TEST RESULTS ON SPECIAL SAMPLES OF NEWS PRINT PAPER

Composition of pulp furnished	Composition by fiber count	Test No.	Tensile strength		Stretch		Oil absorption		Thickness, Inch	Weight 24 by 36—1,000, Pounds	Bursting strength, Points	Ash, Per cent	Opacity, Bureau of Standards tester, Per cent	Densometer reading, Seconds	Gloss, Per cent	No. of Bureau of Standards machine run
			Machine, Kilograms	Across, Kilograms	Machine, Per cent	Across, Per cent	Wire, Seconds	Felt, Seconds								
100 per cent ground wood	100 per cent ground wood	61529	2.62	2.11	1.4	2.1	98	90	0.0033	61.5	10.6	1.95	93.6	42	22.9	850
100 per cent ground wood	100 per cent ground wood	61536	3.29	2.21	1.3	1.6	115	88	.0032	66.9	12.0	1.94	95.6	40	23.4	857
80 per cent ground wood, 20 per cent unbleached sulphite.	75 per cent ground wood, 25 per cent unbleached sulphite.	61530	3.95	2.41	1.5	2.2	80	80	.0030	64.3	13.3	1.37	94.2	48	23.4	851
60 per cent ground wood, 40 per cent unbleached sulphite.	63 per cent ground wood, 37 per cent unbleached sulphite.	61531	5.03	2.77	1.3	2.2	95	86	.0030	72.0	19.2	1.10	91.3	44	24.1	852
40 per cent ground wood, 60 per cent unbleached sulphite.	46 per cent ground wood, 54 per cent bleached sulphite.	61532	6.67	3.39	1.4	2.3	252	264	.0029	69.1	24.7	.75	85.4	147	24.5	853
80 per cent ground wood, 20 per cent bleached sulphite.	70 per cent ground wood, 30 per cent bleached sulphite.	61533	2.87	1.73	1.5	1.9	61	57	.0030	59.1	9.9	1.63	89.7	29	22.9	856
60 per cent ground wood, 40 per cent bleached sulphite.	60 per cent ground wood, 40 per cent bleached sulphite.	61534	3.50	2.20	1.2	2.6	70	73	.0031	69.4	12.8	1.29	89.1	33	23.0	855
40 per cent ground wood, 60 per cent bleached sulphite.	41 per cent ground wood, 59 per cent bleached sulphite.	61535	4.23	2.39	1.5	2.5	68	70	.0029	69.4	16.7	1.02	86.0	43	23.3	854

printing papers and also to establish the maximum variation permissible between the two sides of the sheet.

Effect of Variation of Percentage of Sulphite Pulp in News Print Papers

Through the courtesy of Dr. George K. Burgess, Director of the Bureau of Standards, eight small rolls of experimental news print were made on the Bureau of Standards papermaking machine. These papers contained 20, 40, and 60 per cent unbleached sulphite, with the remainder ground wood; and 20, 40, and 60 per cent bleached sulphite with the remainder ground wood. The seventh sample was 100 per cent ground wood. Since a sufficient amount of pulp was available, a second roll of the 100 per cent ground wood paper was made later. The stock containing 60 per cent of sulphite pulp was passed through a jordan refiner before being run to the paper machine; the other lots were mixed in the beater until uniform.

No rosin size was used, but alum was added to the extent of 10 pounds per ton of pulp. The water at the head box had a pH value between 6 and 7. Dupont "Paper Blue R Concentrated" was added to each furnish to give the paper a blue-white color, but the results were not as good as had been anticipated. The ground wood was of short fiber length and contained considerable wood flour. Its color was a dull gray. The unbleached sulphite pulp was considered somewhat dirty.

The results of the tests made on representative samples of each variety of news print will be found in the accompanying tabulation. These tests were made in the Government Printing Office laboratory under atmospheric conditions of 50 per cent relative humidity and 70 deg. F.

Conclusions

The following conclusions are drawn from physical tests on the eight special samples of newsprint:

1. Increase in the percentage of sulphite pulp increases the tensile and bursting strength of news print, but bleached sulphite does not increase the strength to the same extent as unbleached sulphite pulp.

2. Increase in the percentage of sulphite pulp apparently increases the basis weight for a given thickness.

3. Increase in the percentage of sulphite pulp decreases the ash content of the paper, although the ash content is higher when bleached pulp is used than is the case if unbleached pulp is used.

4. The opacity of paper decreases as the percentage of sulphite pulp increases. Ground wood pulp is most opaque, unbleached sulphite next, and bleached sulphite most transparent.

5. The gloss of the paper increases slightly with the increase in percentage of sulphite pulp. Bleached sulphite yields a lower gloss than corresponding amounts of unbleached sulphite pulp.

The opacity readings shown in the tabulation were confirmed by photographs taken through unprinted papers and through the sheets after being printed with a thin film of oil.

Ink Absorption

Examination of draw outs made with a standard news ink on each of the eight papers led to the following conclusions:

1. The higher the percentage of ground wood, the more rapidly the ink is absorbed by the paper.

2. News print containing bleached sulphite absorbs ink more readily and more evenly than does news print containing an equal percentage of unbleached sulphite.

3. With increasing percentages of sulphite pulp, there are an increasing number of fibers which are not coated with pigment particles.

4. The penetration, as observed from the opposite side of the sheet two days after the draw outs were made, is least in the paper made from 100 per cent ground wood, and increases with the per cent of sulphite. In each case the papers made with unbleached sulphite show more penetration than corresponding papers containing the same percentages of bleached sulphite.

These tests indicate that from the printing standpoint alone, the most suitable sheet would contain 100 per cent ground wood, provided such a sheet would possess adequate strength. An all ground wood paper has a higher opacity, less strike through, and prints more uniformly than do news print papers containing sulphite pulp.

In the committee report given at the February, 1928, meeting, E. O. Reed described in detail the method worked out in the Government Printing Office laboratory for measuring the sizing quality of printing papers by means of printing ink oils instead of the water solutions formerly used. These tests have been used by the Government Printing Office since that time in evaluating mimeograph book and news print papers with good success. It is interesting to note that similar work was done recently in France and Germany and the same conclusions reached, although the workers were apparently not aware of the work done here some years previously. The work in Germany was done by Dr. Drechsel of the Textile and Paper Technical Institute of the Dresden Technical College, Dresden, Germany and was printed in full in Papierfabrikant, Fest und Auslands Heft, 1931, pages 97-103.

It was found necessary to develop methods for making cross sections of printed matter to determine the extent of penetration of oils and pigments and also the effect of other factors such as excessive impressions, lack of impressions, varying amounts of ink, etc.

Practically no information was available on methods for such work. H. N. Lee of the Hammermill Paper Company had done excellent work along these lines and gave us full information as to his procedure. It was found to be adaptable for some of the work, but the mounting medium removed all the oils, eliminating the opportunity of studying their effect on the printed work. The Army Medical Museum and the Bureau of Plant Industry, Department of Agriculture made suggestions as to possible procedures. A satisfactory method has now been developed and a number of slides made. Insufficient time was available for photographing the slides for this report, but complete details can probably be included next year.

Accelerated Aging Test for Paper

Reprints of the article "Accelerated Aging Test for Paper" by R. H. Rasch, which was published in the September Bureau of Standards Journal of Research are now available for purchase from the Superintendent of Documents, Washington, D. C., (Price 10 cents, cash).

This reports the results of a study of a series of Government bond and ledger papers with reference to certain properties that appear to be related to permanence. These papers, purchased on specification, were assumed to be representative of the different commercial grades. A thorough study was made of the physical and chemical properties of the papers as well as of their behavior when exposed to various accelerated aging tests. The results indicate the feasibility of classifying papers by means of suitable chemical, strength, and accelerated aging tests. The chemical tests include tests for fiber purity and noncellulosic impurities, such as acid and rosin, used in sizing. The fiber purity, which is indicated by the alpha cellulose content and copper number, was found to bear an important relation to the stability of the papers. The accelerated aging test, which consists in exposing the papers to a temperature of 100 deg. C. for 72 hours, and then determining the effect produced on the chemical and physical properties, appears to arrange the papers in about the same order of stability that would be expected on natural aging. A comparison of the results of the above-mentioned aging treatment with results obtained by using more nearly normal condition (60 deg. C. for 860 hours, and sunlight exposures) shows that they all classified the papers in the same order of stability. These two findings are evidence that the more drastic treatment, which is desirable in respect to convenience and rapidity, gives results in line with more normal aging effects.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Edgely, Pa.—The Paterson Parchment Paper Company, 33 Eighth street, Passaic, N. J., has awarded a general building contract to the F. G. Pittet Construction Company, 9 Colt street, Paterson, N. J., for proposed new addition to mill at Edgely, near Bristol, Pa., consisting of a two-story unit, 90 x 200 feet, estimated to cost over $75,000, with equipment. Work is scheduled to be placed under way at once, and unit will be pushed to completion. It will be of brick and steel type. The Haenichen Engineering Company, 222 West Broadway, Paterson, N. J., is engineer in charge.

Harrisburg, Pa.—Property of the Harrisburg Paper Box Corporation, 1550 Vernon street, will be offered at a public sale, April 7, 2 p.m., by W. J. McClintock, Jr., and John W. Cowden, receivers for the company.

Topsham, Me.—Fire recently damaged a portion of local warehouse and distributing building of the Pejepscot Paper Company. Loss is reported at about $10,000, including stock and equipment. The damage will be replaced.

Laurel, Miss.—The Masonite Corporation, Laurel, is advancing production at its local wallboard mill, adopting a three-shift, 24-hour working schedule, with regular working quota. It is expected to hold to this basis for an indefinite period.

New York, N. Y.—The Crest Paper Box Company, Inc., care of Louis Herman, 401 Broadway, representative, recently organized, is said to be planning operation of a local plant for the manufacture of paper boxes and containers. It is capitalized at $20,000.

Los Angeles, Cal.—The Jaite Company, 245 North Fries Avenue, Wilmington, Los Angeles, manufacturer of paper bags and containers, with headquarters at Jaite, Ohio, has approved plans for a new plant unit at 880 D street, Wilmington, to be one and two-story, 180 x 210 feet. It is estimated to cost over $55,000, with equipment. Work will be placed under way at once. General contract has been let to the William P. Neil Company, 4814 Loma Vista avenue, Los Angeles.

Irvington, N. J.—A new process for forming crystals on paper and carrying out other decorative paper work is being developed by Harry P. Taber, Wilmington, Del., in cooperation with the Atlantic Chemical Company, Inc., 1186 South Grove street, Irvington. Mr. Taber has established a laboratory in the last noted plant and is carrying out experiments for commercial development. It is understood that the new process will be used first for the decorating of ordinary wrapping papers to add attractiveness for consumer purposes.

Hudson Falls, N. Y.—The Standard Wall Paper Company, Hudson Falls, is reported to be planning the establishment of a new Canadian branch mill in the vicinity of Quebec, Montreal, for output for the Canadian trade. Estimates of cost have not been announced. It is understood that property is being selected.

Troy, N. Y.—The paper warehouse of J. H. Hayner, Chatham Center, near Troy, on Campbell road, was destroyed by fire recently. An official estimate of loss has not been announced.

Albany, N. Y.—The Bernie Paper Box Corporation, care of Saul I. Radin, 120 Broadway, New York, attorney, representative, recently organized with a capital of 200 shares of stock, no par value, is said to be planning operation of a local plant for the manufacture of paper boxes and containers. Henry F. Pine and Mortimer E. Robbins are among the incorporators.

Philadelphia, Tenn.—The Philadelphia Hosiery Mills, Philadelphia, are said to be planning the installation of equipment for a cardboard box manufacturing plant in connection with a new addition to mill. The structure will be two-story, reported to cost over $40,000 with equipment. A portion of the unit will be utilized for general mill service. General building contract has been let to F. S. Robinson, London, Tenn.

De Pere, Wis.—Fire recently did slight damage to the local mill of the Northern Paper Mills. An official estimate of loss has not been announced. There was no interruption in production. The damage will be replaced.

New Brunswick, N. J.—The Empire Box Corporation, Codwise, avenue, is reported considering an addition to its local paper box and container manufacturing plant. Size and details will be determined in the near future, including estimates of cost.

New Companies

Brooklyn, N. Y.—The St. Louis Gumming Corporation, Brooklyn, has been incorporated with a capital of 200 shares of stock, no par value, to manufacture gummed papers, etc. The incorporators are Samuel Sherman, 117 East Fifty-first street, and Leon Jaffe, Hotel St. George, both Brooklyn.

New York, N. Y.—The S. & W. Paper Box Company, 141 Broadway, New York, has filed notice of company dissolution under state laws.

Plainville, Conn.—The Connecticut Paper Products Inc., has been incorporated with a capital of $100,000, to manufacture paper goods of various kinds, paper bags, paper boxes, etc. The incorporators are R. P. Butler, Paul Volpe and A. E. Howard, Jr., West Hartford, Conn.

Brooklyn, N. Y.—The Bush Paper Company has been incorporated with a capital of $5,000, to deal in paper goods of various kinds. The principal incorporators are David and Irving Bush, 1334 Forty-first street, Brooklyn.

New York, N. Y.—Cantasano Brothers, Inc., has been incorporated with a capital of 100 shares of stock, no par value, to deal in paper stocks, waste paper, etc. The company is represented by Brodek, Raphael & Eisner, 72 Wall street, New York, attorneys.

NEW MILL FOR BRITISH COLUMBIA

(Continued from page 9)

Referring to a contention by the defense that the contract was "illegal under federal law which prohibits combines" counsel for Price Bros. stated that "the law only bans combines which are unjust, serve to restrain commerce or which unduly limit the liberty of trade." It had been proven "beyond doubt," Mr. St. Laurent continued, "that the contracts between the various members of the Institute was made with the view of saving the news print industry and stabilizing its commerce."

The fact that Price Bros. had compensated various newspapers in return for contracts, Mr. St. Laurent said, had resulted in a common benefit to the other members of the Institute. Price Bros. had paid these compensations from their own account, he concluded.

Justice Stein will study the written arguments before giving a decision in the case.

Price Bros. Pass Preferred Dividend

The directors of Price Bros. & Co. have announced discontinuance of the dividend payments on the 6½ per cent preferred stock of the company. For 1930 the company's earnings were equal to $20.65 per share on the preferred. The report for the fiscal year ended with February has not yet been made public. The next quarterly dividend payment on the preferred was due in April, and this will mark the first break in payments since the preferred stock was issued seven years ago.

Howard Smith's Income Down

The annual report of the Howard Smith Paper Mills, Ltd., shows that while all charges were well earned with a small surplus remaining, operating profit for the year ended December 31, 1931, was $1,048,760, as compared with $1,231,760 in 1930, while net earnings were $62,362, as compared with $440,707. Current assets are down to $4,010,621 from $5,168,592, while liabilities dropped sharply from $3,142,103 to $1,865,745, leaving net working capital of $2,144,876 against $2,026,489 in 1930.

The President's Report

In his remarks to shareholders President Harold Crabtree says in part:—

"The business of your company throughout this period was naturally affected by the unfavorable general conditions which prevailed, but despite this fact, and despite a decided drop in the value of tonnage manufactured, your company's earnings were maintained at what the directors consider to be a reasonably satisfactory level.

"Compared with last year the working capital shows an increase of $118,325.26, while bank loans direct and indirect, were reduced by $1,053,310.77. Reserves for depreciation and depletion were increased from $979,803.96 to $1,414,392.55.

"Inventory values have all been adjusted to correspond with present replacement costs."

B. C. Pulp & Paper Co. Report

The annual report of the British Columbia Pulp and Paper Company, Ltd., for the year ended December 31 last shows that while earnings were reduced in line with conditions in the pulp and paper export markets, a satisfactory liquid position was maintained. Profits before interest and depreciation were $363,446 against bond interest charges of $310,123. After provision for depreciation of properties and investments, income tax and payment of a half-year's preferred dividend, a loss of $200,788 was indicated.

Indianapolis Demand Slow

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., March 28, 1932.—Little improvement is to be seen in the paper market here. In fact February has been a little worse than usual and March is none too lively. There is some demand for the better grades of paper, but the common grades seem better situated when the market is viewed as a whole. There appears nothing in the immediate future that is likely to stimulate business.

The common grades, particularly bags and wrapping paper, and in particular heavy wrapping paper, are in fair demand, especially when general business conditions are taken into consideration. Prices are well held in the bag market, the price situation being in better shape than it has been for months. A resumption in some of the industries allied with the automotive field has created an increase in demand for heavy wrapping paper and for cartons and similar merchandise.

Little buying has been done as yet in the summer specialty field. Stocks in all retail stores are very low and the first coming of really warm weather will mean an immediate flood of orders. There is no reason to believe that volume of these specialties will not be equally as large as last year.

Reports from the various factories in Indiana converting paper products of various kinds, show a gradual expansion in business. The production schedules are about fifty per cent of capacity in most cases and indications are for a further increase in production.

Some inquiries now are being received for building papers. This demand has not yet opened for spring, but it is all reach to break, judging from early inquiries. Jobbers here believe the season will be as good as last at least and perhaps better. While there is no big construction in view at the present time, there will be a vast amount of remodeling and similar work.

Paper stock men still have their warehouses full, with the mills taking only small quantities.

Paper Testing and Chemistry

Isaac Pitman & Sons have recently published a 313 page book by Gordon A. Jahans of England, on "Paper Testing and Chemistry for Printers." The author himself a papermaker who later worked in the publishing field, has prepared his text particularly for the benefit of buyers of paper.

A brief review of paper making and a classification of papers with a few sample specifications is followed by a chapter on tests that may be made without the use of instruments. The general testing methods are then described. Unfortunately the author omits mention of numerous instruments in use in the United States, but the British equipment and instruments are very well reviewed.

There are chapters dealing with quantitative and qualitative analysis both in a general way and with reference to their use in paper testing; a number of chemical tests are mentioned. Chapters on impurities in paper and machine room troubles are of interest and in a final chapter on questions and problems, the author endeavors to answer such questions as "Can paper be rendered non-inflammable?" "If paper has become warped through moisture can it be restored to its normal condition?" "Can paper be rendered waterproof?" and "Is indelible ink really indelible?"

This book is obtainable from the Book Department of the Technical Association of the Pulp and Paper Industry, 370 Lexington Avenue, New York, at $3.75 plus postage.

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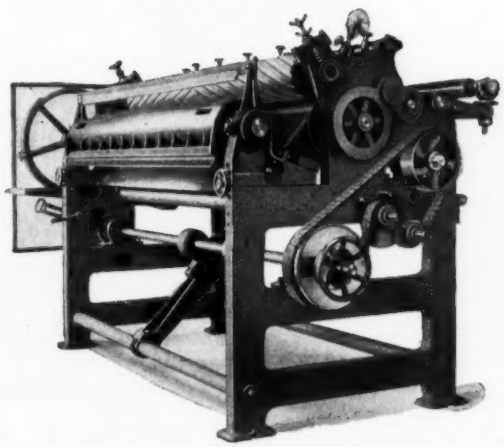

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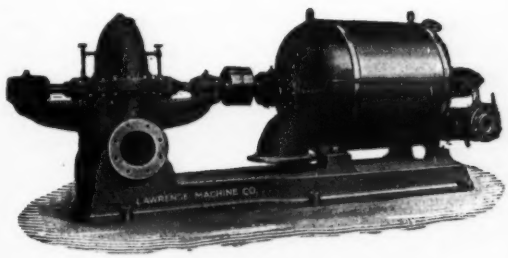

Lawrence pumps for all conditions and services. Forty-four years of practical experience with centrifugal pump development places us among the leaders. Our efforts have been rewarded by the acceptance of our product in general.

Thousands of installations and the successful performance of our pumps should be sufficient proof of our ability to handle your pumping problems. Our engineering force is at your command.

Have only Lawrence Pumps, manufactured by the

Lawrence Machine & Pump Company
361 Market St. Lawrence, Mass.

100 Tons Kraft Per Day — 58% A. D.
***With the Famous* Kamyr Wet Machine**

Production . . . .

Kraft	up to 100 Tons
Sulphite	up to 80 Tons
Soda	up to 60 Tons
Groundwood	up to 50 Tons

Results . . . . . .

With 1 Press	42% A.D.
With 2 Presses	55% A.D.
With 2 Presses & Predryer	58% A.D.

Saves . . . . . .

Felt, Wires, Labor, Upkeep, Power, Fibre, Floor Space

G. D. JENSSEN CO.

Chrysler Bldg., N. Y. C. *Sole Agents in U. S. A. for* **1017 White Bldg., SEATTLE**
PAPER MACHINERY Ltd.
MONTREAL

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

SUMMARY

WEEK ENDING MARCH 26, 1932

Cigarette paper.....2190 cs.
Wall paper.....1 ble., 5 cs.
Hanging paper.....12 cs.
News print.....3741 rolls
Printing paper.....78 rolls, 20 bls., 128 cs.
Wrapping paper.....14 rolls, 86 cs.
Kraft paper.....997 bls.
Drafting paper.....1 cs.
Drawing paper.....20 rolls, 22 cs.
Filter masse.....50 bls.
Colored paper.....13 cs.
Surface coated paper.....140 cs.
Baryta coated paper.....122 cs.
Metal coated paper.....28 cs.
Photo paper.....15 cs.
Decalcomania paper.....44 cs.
Tissue paper.....21 cs.
Writing paper.....6 cs.
Letter paper.....3 cs.
Envelopes.....14 cs.
Writing paper and envelopes.....2 cs.
Gummed paper.....1 cs.
Felt paper.....11 bls.
Parchment paper.....7 cs.
Carbon paper.....15 cs.
Card boards.....20 cs.
Paste boards.....95 cs.
Miscellaneous paper.....188 rolls, 157 bls., 69 cs.

CIGARETTE PAPER

Standard Products Corp., Rochambeau, Havre, 145 cs.
American Tobacco Co., Collamer, Bordeaux, 475 cs.
De Manduit Paper Corp., Collamer, St. Nazaire, 1168 cs.
American Tobacco Co., Ile de France, Havre, 190 cs.
Champagne Paper Corp., Ile de France, Havre, 182 cs.
Champagne Paper Corp., Exochorda, Genoa, 25 cs.
Max Speigel & Son, Pres. Roosevelt, Hamburg, 5 cs.

WALL PAPER

Irving Trust Co., Hamburg, Hamburg, 5 cs.
F. J. Emmerich, Hamburg, Hamburg, 1 ble.

HANGING PAPER

R. E. Thibout, Rochambeau, Havre, 12 cs.

NEWS PRINT

Perkins, Goodwin & Co., Berlin, Bremen, 42 rolls.
Jay Madden Corp., Berlin, Bremen, 264 rolls.
W. H. Bell, Markland, Liverpool, N. S., 2404 rolls.
Jay Madden Corp., Malaren, Hango, 302 rolls.
Lunham & Reeve, Inc., Malaren, Hango, 125 rolls.
Perkins, Goodwin & Co., Hamburg, Hamburg, 299 rolls.
Perkins, Goodwin & Co., Pres. Roosevelt, Hamburg, 305 rolls.

PRINTING PAPER

International F'd'g Co., J. Jadot, Antwerp, 10 cs.
P. C. Zuhlke, Berlin, Bremen, 4 cs.
C. Steiner, Berlin, Bremen, 7 cs.
H. Reeve Angel & Co. Inc., American Banker, London, 1 cs.
Jay Madden Corp., Malaren, Hango, 20 bls., 66 rolls.
E. Dietzgen & Co., West Arrow, Rotterdam, 94 cs.
Keuffel & Esser Co., Hofuku Maru, Hamburg, 12 rolls.
Martin & Bechtold, Hamburg, Hamburg, 4 cs.
E. Dietzgen & Co., Hamburg, Hamburg, 8 cs.

WRAPPING PAPER

Borden Riley Paper Co., Berlin, Bremen, 6 cs.
Yardley & Co., American Banker, London, 5 cs.
Standard Products Corp., Pennland, Antwerp, 14 rolls, 4 cs.
F. C. Strype, Pennland, Antwerp, 4 cs.
H. Reeve Angel & Co. Inc., Pennland, Antwerp, 4 cs.
Gevaert Co. of America, Pennland, Antwerp, 10 cs.
E. Dietzgen & Co., West Arrow, Rotterdam, 53 cs.

KRAFT PAPER

Walker-Goulard-Plehn Co., Hamburg, Hamburg, 997 bls. (for export).

DRAFTING PAPER

A. C. Cofod & Co., Baltic, Liverpool, 1 cs.

DRAWING PAPER

Lunham & Reeve, Inc., Rochambeau, Havre, 1 cs.
P. Puttman, Pennland, Antwerp, 6 cs.
Keuffel & Esser Co., Hofuku Maru, Hamburg, 15 cs., 20 rolls.

FILTER PAPER

C. Schleicher & Schull Co. Inc., American Shipper, Hamburg, 1 ble.
C. Schleicher & Schull Co. Inc., Pres. Roosevelt, Hamburg, 11 cs.
H. Reeve Angel & Co. Inc., American Banker, London, 8 cs.
E. Fougera & Co., Mauretania, Southampton, 46 cs.

FILTER MASSE

J. Manheimer, Bremen, Bremen, 50 bls.

COLORED PAPER

J. Beckhard, Bremen, Bremen, 6 cs.
F. Murray Hill Co., Hamburg, Hamburg, 3 cs.
J. J. Shore & Co., Hamburg, Hamburg 4 cs.

SURFACE COATED PAPER

Gevaert Co. of America, J. Jadot, Antwerp, 65 cs.
Gevaert Co. of America, Pennland, Antwerp, 49 cs.
Gevaert Co. of America, West Arrow, Antwerp, 26 cs.

BARYTA COATED PAPER

Globe Shipping Co., Berlin, Bremen, 122 cs.

METAL COATED PAPER

Winter Wolf & Co., West Arrow, Antwerp, 2 cs.
K. Pauli Co., Hamburg, Hamburg, 26 cs.

COATED PAPER

Happel & MacAvoy, Pres. Roosevelt, Hamburg, 2 cs.

PHOTO PAPER

Phoenix Shipping Co., Berlin, Bremen, 2 cs.
Medo Photo-Supply Co., American Banker, London, 1 cs.
American Express Co., Hamburg, Hamburg, 12 cs.

DECALCOMANIA PAPER

The Prager Co., Pennland, Antwerp, 1 cs.
B. F. Drakenfeld & Co., Baltic, Liverpool, 20 cs. (duplex).
C. W. Sellers, Bremen, Bremen, 23 cs.

TISSUE PAPER

W. J. Byrnes, Mauretania, Southampton, 5 cs.
B. F. Drakenfeld & Co., Baltic, Liverpool, 9 cs.
F. C. Strype, Baltic, Liverpool, 1 cs.
C. L. Voorhees, Baltic, Liverpool, 6 cs.

WRITING PAPER

Lazard Freres, Rochambeau, Havre, 3 cs.
C. W. Sellers, Rochambeau, Havre, 3 cs.

LETTER PAPER

Japan Paper Co., Saturnia, Trieste, 3 cs.

ENVELOPES

J. Beckhard, Bremen, Bremen, 14 cs.

WRITING PAPER AND ENVELOPES

Japan Paper Co., Alaunia, Southampton, 2 cs.

GUMMED PAPER

Meadows Wye & Co., Alaunia, Southampton, 1 cs.

FELT PAPER

Heemsoth Basse & Co., West Arrow, Rotterdam, 11 bls.

PARCHMENT PAPER

F. C. Strype, J. Jadot, Antwerp, 7 cs.

CARBON PAPER

Van Oppen & Co., Exochorda, Genoa, 15 cs.

CARD BOARDS

Houbigant, Inc., Ile de France, Havre, 2 cs.
National City Bank, Ile de France, Havre, 3 cs.
G. M. Thurnauer Co., Pennland, Antwerp, 15 cs.

PASTE BOARDS

Coty, Inc., Rochambeau, Havre, 29 cs.
Colmar Paper Corp., J. Jadot, Antwerp, 6 cs.
——, Berlin, Bremen, 60 cs.

MISCELLANEOUS PAPER

H. Reeve Angel & Co., Inc., Drottningholm, Gothenburg, 85 rolls, 16 bls.
Kreamer & Co., Drottningholm, Gothenburg, 138 bls.
The Borregaard Co. Inc., Drottningholm, Gothenburg, 90 rolls, 60 cs.
E. H. Sargent & Co., Drottningholm, Gothenburg, 6 cs.
Keller Dorian Paper Co., Ile de France, Havre, 1 cs.
H. W. Robinson & Co., Ile de France, Havre, 1 cs.
R. Wilson Paper Corp., Athenia, Glasgow, 12 rolls.
R. F. Downing & Co., Mauretania, Southampton, 1 cs.
Schweiker & Co., Pennland, Antwerp, 3 bls.
C. H. Forsman, Liberty, Dunkirk, 1 roll.

RAGS, BAGGINGS, ETC.

H. G. Lichtenstein, Collamer, Bordeaux, 123 bls. rags.
——, American Shipper, Hamburg, 60 bls. rags.
D. M. Hicks, Inc., Athenia, Glasgow, 48 bls. flanelletts.
G. W. Millar & Co. Inc., Athenia, Glasgow, 46 bls. rags.
Bank of N. Y. & Trust Co., Athenia, Glasgow, 75 bls. rags.
Castle & Overton, Inc., Athenia, Glasgow, 161 bls. rags.
D. M. Hicks, Inc., Pennland, Antwerp, 43 bls. flax pulp.
Castle & Overton, Inc., Liberty, Havre, 131 bls. rags.
J. Cohen & Son, Baltic, Liverpool, 23 bls. paper stock.
E. J. Keller Co. Inc., West Arrow, ——, 75 bls. bagging.
Castle & Overton, Inc., Evanger, B. Ayres, 348 bls. hessian scrap.
——, Exiria, Barcelona, 116 bls. bagging.
——, Exiria, Barcelona, 82 bls. rags.
——, Cypria, Barcelona, 89 bls. rags.
S. Birkenstein & Son, Cabo Mayor, Barcelona, 100 bls. rags.
Darmstadt, Scott & Courtney, Cabo Mayor, Malaga, 240 bls. rags.
Banco Coml. Italiana Trust Co., Cabo Mayor, Genoa, 54 bls. bagging.
R. Canovai & Son, Cabo Mayor, Leghorn, 67 bls. rags.
I. Hinerfeld, Pipestone County, Havre, 4 bls. rags.
Castle & Overton, Inc., Pipestone County, Havre, 32 bls. bagging.
V. Galaup, Pipestone County, Havre., 46 bls. rags.

HIDE GLUE

——, Hamburg, Hamburg, 100 bags.

GLUE STOCK

——, Pipestone County, Dunkirk, 79 bags.
E. Weil, Inc., Pipestone County, Havre, 398 bdls.
Bank of Montreal, Pipestone County, Havre, 1488 bdls.

OLD ROPE

National City Bank, American Banker, London, 81 coils.

(Continued on page 48)

WOOD PULP
AGENTS

PRICE & PIERCE, Ltd.,

60 EAST 42nd ST.
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West Virginia Pulp and Paper Company

Manufacturers of

SUPERCALENDERED
and
MACHINE FINISHED BOOK
and LITHOGRAPHIC
PAPERS

Offset, Envelope, Bond, Writing, Cover and Music Paper, Index Bristol, Post Card and Label Papers

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Glens Falls Machine Works

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STANDARD WET MACHINES

GLENS FALLS ROLLING ACTION FLAT SCREEN

THE A. D. WOOD SAVEALL, THICKENER, WASHER AND WATER SCREEN

GLENS FALLS DECKER AND DECKER WASHER

GLENS FALLS ROTARY SULPHUR BURNER

PULP GRINDERS, THREE OR FOUR POCKET (Roller Bearings)

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OLIVER-ROGERS WET MACHINE

RAY SMYTHE, 301 PARK BLDG., PORTLAND, ORE.
Western Representative

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SECTIONAL BURRS

Manufactured in 3, 4, 5, 6 and 7 cuts per inch.

3" Diam.

SHARP — STRONG — TOUGH

ILLUSTRATION SHOWS ½ SIZE

OTHER SPECIALTIES

WARREN IMPROVED CALENDER With flexible blades, Universal Adjustment and Control, Patented — DOCTORS

WARREN IMPROVED DOUBLE DRUM— — WINDER

BALL HYDRANT for Stock Circulating Systems — VALVES

AND OTHER PAPER MILL MACHINERY

MANUFACTURED BY
TICONDEROGA MACHINE WORKS
TICONDEROGA, N. Y.

SEND FOR BULLETINS—ASK FOR PRICES.

Imports of Paper and Paper Stock

(Continued from page 46)

E. J. Keller Co. Inc., Exochorda, ——, 182 coils.
——, Cypria, Barcelona, 40 bls.
N. E. Berzen, M. de Comillas, Cadiz, 301 bls.
Brown Bros., Harriman & Co., Cabo Mayor, Pasages, 135 rolls.

CASEIN

D. C. Andrews & Co., Hamburg, Hamburg, 60 bags.
Kalbfleisch Corp., Eastern Prince, B. Ayres, 250 bags.

CHINA CLAY

L. A. Salomon & Bro., Baltic, Liverpool, 27 bags.

WOOD FLOUR

State Chemical Co., West Arrow, Rotterdam, 620 bags, 32600 ks.
Innes Speiden & Co., Drottningholm, Gothenburg, 1452 bags.

WOOD PULP

J. Andersen & Co., Drottningholm, Gothenburg, 250 bls. sulphite.
Perkins Goodwin & Co., Drottningholm, Gothenburg, 117 bls. sulphate.
Johaneson, Wales & Sparre, Inc., Drottningholm, Gothenburg, 250 bls. sulphite.
Perkins, Goodwin & Co., Drottningholm, Gothenburg, 211 bls. sulphite.
E. M. Sergeant & Co., Drottningholm, Gothenburg, 1048 bls. kraft soda.
Russell McCandless, Drottningholm, Gothenburg, 600 bls. chemical pulp.
N. Y. Trust Co., American Shipper, Hamburg, 500 bls. sulphite 101 tons.
Lagerloef Trading Co., Malaren, Hango, 3564 bls. sulphite; 200 bls. sulphate.
Castle & Overton, Inc., Malaren, Hango, 3197 bls. sulphite.
Brown Bros., Harriman & Co., Hofuku Maru, Hamburg, 375 bls. wood pulp, 75 tons.
E. J. Keller Co. Inc., Hofuku Maru, 1035 bls. wood pulp, 155 tons.
Castle & Overton, Inc., Pres. Roosevelt, Hamburg, 184 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING MARCH 26, 1932

Castle & Overton, Inc., Collamer, Bordeaux, 32 bls. rags.
Castle & Overton, Inc., Collamer, St. Nazaire, 132 bls. rags.
P. Berlowitz, Collamer, St. Nazaire, 619 bls. rags.
J. Lang Paper Co., Collamer, St. Nazaire, 148 bls. rags.
Castle & Overton, Inc., West Arrow, Antwerp, 47 bls. rags.
T. M. Duche & Sons, West Arrow, Antwerp, 1155 bags glue stock.
J. M. Hagy Waste Works, West Arrow, Antwerp, 25 bls. rags.
Katzenstein & Keene, Inc., West Arrow, Antwerp, 113 bls. rags.
Corn Exchange Natl. Bank, West Arrow, Antwerp, 7 cs. paper board.
——, Cypria, Marseilles, 43 coils old rope.
Castle & Overton, Inc., Pipestone County, Dunkirk, 151 bls. rags.
Philadelphia Natl. Bank, Pipestone County, Havre, 13 bls. rags.
J. Lang Paper Co., Pipestone County, Havre, 390 bls. rags.
Furness Withy & Co., Markland Liverpool, N. S., 2908 rolls news print.
E. J. Keller Co. Inc., West Eldara, ——, 122 bls. rags.
E. J. Keller Co. Inc., City of Flint, ——, 66 bls. rags.
E. J. Keller Co. Inc., Hannover, ——, 117 bls. rags; 361 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING MARCH 26, 1932

Parsons & Whittemore, Inc., City of Hamburg, ——, 980 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING MARCH 26, 1932

Darmstadt, Scott & Courtney, Liberty, Dunkirk, 49 bls. bagging.

PORTLAND IMPORTS

WEEK ENDING MARCH 26, 1932

Lagerloef Trading Co., Malaren, Hango, 2896 bls. sulphate; 6429 bls. sulphite.

NEW LONDON IMPORTS

WEEK ENDING MARCH 26, 1932

Lagerloef Trading Co., Malaren, Hango, 2330 bls. sulphate.

BOSTON IMPORTS

WEEK ENDING MARCH 26, 1932

T. M. Duche & Sons, West Arrow, Antwerp, 470 bags glue stock.
National Shawmut Bank, West Arrow, Antwerp, 16 bls. thread waste.
Meredith Linen Mills, West Arrow, Antwerp, 75 bls. flax waste.
True & McClelland, West Arrow, Antwerp, 180 bls. rags.
French Worsted Co., West Arrow, Antwerp, 52 cs. paper tubes.
Castle & Overton, Inc., Pipestone County, Havre, 37 bls. rags.
Irving Trust Co., Pipestone County, Havre, 184 bls. rags.

Fraser Industries Formed

T. A. Hendry, vice president in Charge of Sales of the Fraser Industries Incorporated has sent out the following self-explanatory announcement:

"As part of a change in policy and organization, the Fraser Companies, in entire agreement with the Mead Sales Company, on April 1, 1932, are to take over the complete distribution of their products, and for this purpose a subsidiary company has been incorporated in Maine to be known as Fraser Industries Incorporated.

"In order that relationships built up during the past years may be continued, those members of the Mead Sales Company most actively engaged in our distribution will join our present staff.

"With full appreciation of the goodwill created on our behalf, we feel confident that the closer contact between yourselves and the operations in general will work to our mutual advantage.

"All communications in the future should be addressed to Fraser Industries Incorporated, 230 Park Avenue, New York City."

New Paper Machine Control

The O'Brien Specialty Company, of Syracuse, N. Y., has developed a Combination Moisture Control and Pressure Regulator that is being used to maintain the pressure uniformly on steam driers, at the same time controlling the tension roll, which lowers the pressure automatically, as the need for steam becomes lessened due to the dry condition of the paper. This is accomplished by means of tension roll operating a Sylphon transmission through an electrically actuated pressure regulator that in turn controls the steam supply line. Some of the features of the Combination Moisture Control and Pressure Regulator are as follows:

1—A Sylphon hydraulically operated transmission to an electrically actuated, sensitive, compensated control that immediately records to slight changes in service pressure, or tension roll, due to moisture content. Assures consistent quality with maximum moisture allowed to secure most profitable operation.

2—No relays, transformers, pilot valves, cables or pulleys are used in standard assembly.

3—Simple, sturdy, sensitive, convenient and practical to easy operation and maintenance. Modern light circuit breaker replaces the old time fuses.

4—Indicator and Recorder of moisture content allows prompt adjustment.

5—Safety Alarm and Automatic Valve Closer prevents time loss. Automatic reset when normal operation is resumed.

6—Everything covered and protected to prevent interference.

To Represent Michigan Steel Casting

The Michigan Steel Casting Company, Detroit, Mich., announces the appointment of I. R. McCall as the company's representative in Wisconsin and Minnesota, specializing in the sale of Misco "C" alloy to sulphite pulp mills, a corrosion resistant made in castings and fabricated pieces.

Mr. McCall is familiar with the pulp and paper industry, having represented the Detroit Graphite Company in this section for many years. He has made a study of corrosion, its causes, effects in the paper and pulp field and ways and means for preventing same. Mr. McCall is a member of Technical Association of the Pulp and Paper Industry.

Sulphur

A FIRST REQUISITE

in

Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

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75 E. 45th Street New York City
Mines: Gulf, Newgulf and Long Point, Texas

The B.Q. QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
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"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

The Borregaard Company
Incorporated
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DISPENSING CABINETS
AND
FIXTURES
THE STANDARD OF THE PAPER TRADE
GRIFFITH-HOPE CO.
WEST ALLIS, WIS.

THE DRAPER FELTS

All kinds and styles of Felts for all kinds and styles of Papers.

Write us about your Felt problems and let us help you reduce your Felt Costs—we will call anywhere at any time.

DRAPER BROS. COMPANY
CANTON, MASS.
Woolen manufacturers since 1856

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, March 30, 1932.

Conditions in the local paper market were fairly satisfactory during the past week. Demand for the various standard grades of paper was slightly better and sales forces of the leading paper organizations are gradually becoming more optimistic. Prices are generally holding to previously quoted levels.

While the news print market is practically unchanged, the outlook for the immediate future is brighter, due to the announcement of large advertising campaigns by the leading automobile manufacturers. Production is being maintained in sufficient volume to take care of current requirements. Stocks at the mills are normal.

Trading in the paper board market is only moderately active. Demand for box board is mainly seasonal. The price situation is unsatisfactory. Some improvement was noticed in the fine paper market. Tissues are moving at a steady pace. The coarse paper market is firm, with kraft wrapping paper more buoyant than of late.

Mechanical Pulp

Although the ground wood market is rather quiet at present, the industry is in a sound statistical position, due to curtailed production in North America and abroad, and offerings are not excessive. The contract movement is well up to average. Prices are generally holding to schedule, without difficulty.

Chemical Pulp

Steadiness prevails in the chemical pulp market. Demand for both imported and domestic grades is fairly active considering general business conditions. Shipments against contract are going forward to the paper mills with regularity. Prices are holding up fairly well despite keen competition for desirable orders.

Old Rope and Bagging

No radical changes have been reported in the old rope market. Domestic and imported old manila rope is in fairly persistent request, although small mixed rope is moving slowly. Prices are practically unchanged. The bagging market is displaying a stronger undertone.

Rags

The domestic rag market is slightly irregular. Demand for cotton rags is spotty. Roofing grades, however, are arousing more interest. Prices are nominal. With the exception of roofing rags, the various grades of imported rags are listless. The price situation continues unsatisfactory.

Waste Paper

Now that the mixed paper production strike in the metropolitan area has been practically discontinued, the lower grades of paper stock are going forward to the board mills in heavier volume. Prices of mixed paper and strictly folded news are fairly steady. The better grades of waste paper are holding up well.

Twine

Most of the business transacted in the local twine market during the past week was along routine lines. Sales are reported to compare favorably to the average of the preceding year at this period. While prices are generally holding to formerly quoted levels, there have been reports of concessions on extra large orders.

Hjalmar Procope Here From Finland

Hjalmar Johan Procope, who has the distinction of having served his native Finland as Foreign Secretary under six different governments, although not yet 43 years of age, arrived in New York last week aboard the North German Lloyd liner *Bremen* from Europe for a short business trip. After spending a few days in New York, Mr. Procope proceeded to Washington, D. C., and thence, for the South. He expects to return to Finland from New York in April.

Mr. Procope is managing director of the Finnish Paper Mills Association, which post he assumed after retiring as Foreign Secretary last year. While in this country, Mr. Procope will study the pulp and paper industry and will confer with publishers and other large users of paper products. His visit has no political significance, although it was Mr. Procope who initiated the current commercial treaty between Finland and the United States.

Despite his comparative youth, Mr. Procope has had an active and brilliant political career. He was born in 1889, and after being graduated from the University of Helsingfors practiced law. He was elected a member of the Finnish Diet on several occasions and twice served as Secretary of Commerce. While Foreign Secretary he represented Finland at the League of Nations in 1924, 1928, 1929 and 1930 and was president of the council of the league during its fifty-first and fifty-second sessions in 1928.

Mr. Procope's political achievements include, besides the treaty between the United States and Finland, other commercial agreements between his country and France, Denmark, Japan, Italy, and other nations.

The Jay Madden Corporation, of 100 East 42nd street, New York, are exclusive sales agents for the Finnish Paper Mills Association in this country.

Northwestern Division to Meet

The Northwestern Division of the American Pulp and Paper Mill Superintendents Association, will hold its annual spring meeting, Saturday, May 7, at Appleton, Wis.

The outstanding feature of this meeting will be the inspection of The Institute of Paper Chemistry after which the Institute Staff under the direction of Dr. Otto Kress, will describe briefly the research work conducted and demonstrate some of the scientific equipment for optical and colloidal work.

The committee in charge promise a full and complete program and a very large attendance is expected. The complete program will be out shortly.

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20 plants to serve You

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Kalamazoo, Michigan

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Browns Greens Reds Yellows

BROWNS
Oxides of Iron
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GREENS
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Guignet's Green

REDS
All types and shades of Oxides of Iron

YELLOWS
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Asbestines and Talcs for Fillers

C. K. WILLIAMS & CO.
EASTON, PA.

Mill Cogs

ON SHORTEST POSSIBLE NOTICE

We make all kinds of Mill Cogs and have special facilities that will be of great service to you. We make a specialty of "ready dressed" cogs which are

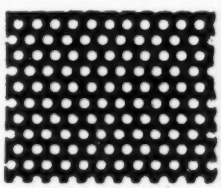
READY TO RUN

the moment driven and keyed. Write at once for circular "G" and instruction sheets free.

THE N. P. BOWSHER CO.
South Bend, Ind.
Established 1882

Perforated Metal Screens

For Pulp and Paper Mills



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The heavy-duty Langston Slitter can be had in any width, to wind any diameter. Use it as a winder or as a rewinder. Speeds up to 3000 feet per minute. Makes rolls of uniform density, square-edged. Langston's Shear-Cut makes no dust—the paper is *clean-cut*, not ground apart. A catalog is yours for the asking.

SAMUEL M. LANGSTON CO., Camden, N. J.

UNION SCREEN PLATE COMPANY
Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE

SCREEN PLATES FOR FLAT SCREENS

Old Plates Reclosed and Re-cut to Accurate Gauge.
Rolled Phosphor Bronze and Copper Plates for Rotary Screens

Sole Manufacturers of the
UNION-WITHAM SCREEN PLATE VAT AND FASTENER

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, March 30, 1932.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45 per ton; while the powder is selling at from 3¼ cents to 3⅜ cents per pound, in barrels, at works.

BLEACHING POWDER.—Steadiness prevails in the bleaching powder market. Shipments against contract are going forward in good volume. Prices generally are well maintained. Bleaching powder is quoted at from $1.75 to $2 per 100 pounds, in drums, at works.

CASEIN.—The casein market continues quiet. Domestic standard ground is quoted at 6½ cents and finely ground at 7½ cents per pound. Argentine standard ground is selling at 8¼ cents and finely ground at 9½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Trading in the caustic soda market is moderately active. Prices are holding to schedule. Solid caustic soda is quoted at from $2.50 to $2.55; while the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market is little changed. Contract shipments are moving in fair volume. Prices are steady. Imported china clay is selling at from $11 to $13 per ton; while domestic paper making clay is quoted at from $7 to $11 per ton, at mine.

CHLORINE.—Conditions in the chlorine market are fairly satisfactory. The contract movement is well up to average. Prices are holding to schedule. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—No radical changes were reported in the rosin market. The grades of gum rosin used in the paper mills are quoted at from $3.70 to $4 per 280 pounds, in barrels, at works. Wood rosin is selling at $3 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Some improvement was noticed in the salt cake market. Prices are steady. Salt cake is quoted at from $15 to $16; chrome salt cake at from $12 to $13 per ton, in bulk, at works. Imported salt cake is selling at from $14 to $15 per ton, ship side.

SODA ASH.—Most of the business transacted in the soda ash market during the past week was along routine lines. Prices are unchanged. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1; in bags, $1.25; and in barrels, $1.38.

STARCH.—The starch market is exhibiting a strong undertone. Prices are holding to previously quoted levels, without difficulty, in most instances. Special paper making starch is quoted at $2.54, in bags; and at $2.81 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Demand for sulphate of alumina is fairly persistent. The contract movement is normal. Commercial grades are quoted at from $1.25 to $1.40; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is quiet. Sulphur is still quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—During the past week, trading in the talc market was listless. Prices are holding to previously quoted levels. Domestic talc is offered at from $16 to $18 per ton, in bulk, at mine. Imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@38.00
Bonds	5.00	@53.25
Index	6.00	@12.00
Writings—		
Extra Superfine	6.50	@15.00
Superfine	6.25	@14.75
Tub sized	4.50	@ 7.00
Engine sized	3.00	@ 5.00
Book, Cased—		
S. & S. C.	5.25	@ —
M. F.	3.75	@ 5.00
Coated and Enamel	6.25	@ 9.75
Lithograph	6.75	@11.25
Tissues—Per Ream—		
White No. 1	.65	@ .70
Anti-Tarnish M. G. only	.65	@ .70
Colored	.70	@ .90
White No. 2	.50	@ .60
Kraft	.65	@ .70
Manila	.55	@ .60
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.00	@ 5.25
No. 2 Wood	3.50	@ 4.00
Butchers	3.37½	@ —
Fibre Papers—		
No. 1 Fibre	4.25	@ 5.50
No. 2 Fibre	4.00	@ 4.75
Common Bogus	1.50	@ 3.00
Screenings	2.00	@ 3.00
Card Middies	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs., No. 1	.09¾	@ —
No. 2	.11¼	@ —
Bleached, basis 20 lbs.	.11¼	@ —
(Delivered New York)		
News, per ton—		
Roll, contract	53.00	@ —
Rolls, spot	53.00	@ —
Sheets	58.00	@ —
Side Runs	38.00	@42.00
Kraft—		
No. 1 Domestic	4.75	@ 6.00
No. 2 Domestic	3.25	@ 4.00
Southern	3.25	@ 4.00
Imported	3.50	@ 4.30
Boards—per ton—		
News	22.00	@25.00
Straw	34.50	@45.00
Chip	22.00	@25.00
Binders' Boards	62.00	@70.00
Standard 85 Test Liner	30.00	@32.50
Sgl. Mla. Ll. Chip	32.50	@37.50
(F. o. b. Mill)		
Wood Pulp Boards	70.00	@80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—		
Moist	22.00	@24.00
Dry	22.00	@24.00
(F. o. b. Mill)		
No. 1 Domestic	20.00	@28.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	2.10	@ 2.90
Easy Bleaching	1.60	@ 1.75
No. 1 strong unbleached	1.50	@ 1.75
Mitscherlich unbleached	1.60	@ 1.75
No. 2 strong unbleached	1.40	@ 1.50
No. 1 Kraft	1.50	@ 1.75
No. 2 Kraft	1.40	@ 1.50
Sulphate—		
Bleached	1.85	@ 2.15
(F. o. b. Pulp Mill)		
Sulphite (Domestic)—		
Bleached	2.00	@ 3.75
Easy Bleaching	1.75	@ 1.90
News	1.50	@ 1.65
Mitscherlich	2.40	@ 2.55
Kraft (Domestic)	1.60	@ 2.75
(Delivered Paper Mills)		
Soda Bleached	2.50	@ —

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	4.50	@ 5.00
New White, No. 2	3.50	@ 4.00
Silesias No. 1	3.50	@ 4.00
New Unbleached	6.00	@ 6.50
New Blue Prints	3.25	@ 3.50
New Soft Blacks	2.50	@ 3.00
Blue Overall	3.50	@ 4.00
Fancy	2.50	@ 3.00
Washables	1.75	@ 2.00
Mixed Khaki Cuttings	3.00	@ 3.25
Pink Corset Cuttings	Nominal	
O. D. Khaki Cuttings	3.50	@ 3.75
Men's Corduroy	1.50	@ 2.00
New Mixed Blacks	2.00	@ 2.25

Old Rags

White, No. 1—		
Repacked	5.25	@ 5.75
Miscellaneous	4.25	@ 4.75
White, No. 2—		
Repacked	3.00	@ 3.50
Miscellaneous	2.30	@ 2.50
St. Soiled, White	1.50	@ 1.75
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.65	@ 1.85
Black Stockings	3.25	@ 3.75
Roofing Rags—		
No. 1	.53	@ .58
No. 2	.48	@ .53
No. 3	.43	@ .48
No. 4	.38	@ .43
No. 5A	.33	@ .38

Foreign Rags

New Rags

New Dark Cuttings	1.40	@ 1.50
New Mixed Cuttings	1.60	@ 1.75
New Light Silesias	3.40	@ 3.50
Light Flannelettes	3.75	@ 4.00
Unbleached Cuttings	5.50	@ 6.00
New White Cuttings	4.75	@ 5.00
New Light Oxfords	4.00	@ 4.25
New Light Prints	2.00	@ 2.25

Old Rags

No. 1 White Linens	5.25	@ 5.50
No. 2 White Linens	4.50	@ 4.75
No. 3 White Linens	3.25	@ 3.75
No. 4 White Linens	1.75	@ 2.25
No. 1 White Cotton	4.00	@ 4.25
No. 2 White Cotton	3.00	@ 3.25
No. 3 White Cotton	2.25	@ 2.50
No. 4 White Cotton	1.40	@ 1.50
Extra Light Prints	1.90	@ 2.10
Ord. Light Prints	1.60	@ 1.75
Med. Light Prints	1.40	@ 1.55
Dutch Blue Cottons	1.35	@ 1.40
French Blue Linens	2.00	@ 2.25
German Blue Linens	2.00	@ 2.10
German Blue Cottons	1.20	@ 1.25
Checks and Blues	1.25	@ 1.30
Lindsay Garments	.75	@ .80
Dark Cottons	.70	@ .75
Old Shopperies	.55	@ .60
New Shopperies	.60	@ .65
French Blues	1.25	@ 1.30

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.10	@ 1.20
Domestic	1.15	@ 1.25
Wool Tares, light	1.00	@ 1.05
Wool Tares, heavy	1.00	@ 1.10
Bright Bagging	1.00	@ 1.05
Small Mixed Rope	.90	@ 1.00
Manila Rope—		
Foreign	1.50	@ 1.60
Domestic	1.50	@ 1.75
New Burlap Cut	1.70	@ 1.80
Hessian Jute Threads—		
Foreign	2.60	@ 2.75
Domestic	2.80	@ 3.00

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, white, No. 1	2.55	@ 2.75
Hard, white, No. 2	1.90	@ 2.00
White envelope cuttings	2.05	@ 2.15
Soft, white, No. 1	1.70	@ 1.80
Flat Stock—		
Stitchless	.70	@ .80
Overissue Mag.	.70	@ .80
Solid Flat Book	.60	@ .70
Crumped No. 1	.45	@ .50
Solid Book Ledger	1.75	@ 1.85
Ledger Stock	.60	@ .70
New B. B. Chips	.20	@ .30
Manilas—		
New Env. Cut	1.75	@ 1.85
New Cuttings	1.40	@ 1.50
Extra No. 1 old	1.05	@ 1.15
Print	.45	@ .50
Bogus Wrapper	.45	@ .50
Container	.25	@ .30
Old Kraft Machine—		
Compressed bales	1.00	@ 1.10
News—		
No. 1 White News	1.60	@ 1.65
Strictly Overissue	.35	@ .45
Strictly Folded	.30	@ .35
No. 1 Mixed Paper	.20	@ .25
Common Paper		Nominal

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The Clay of Uniformity

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FOR
AMERICAN TRADE

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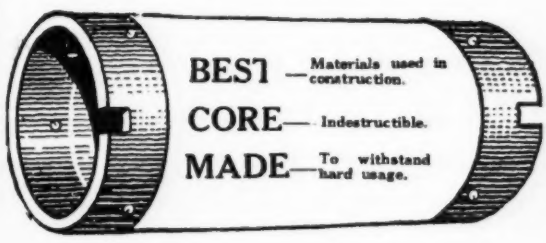

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Canadian Elixman Company
HAMILTON, ONTARIO
Elixman Paper Core Company
CORINTH, N. Y.

Twines

(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.11¾	@	.12¾
Tube Rope—			
4-ply and larger	.09¾	@	.11¾
Fine Tube Rope—			
4-ply	.11	@	—
3-ply	.12	@	—
2-ply	.13	@	—
Paper Makers Twine			
Balls	.08¾	@	.10¼
Box Twine, 2-3 ply	.07	@	.08
Jute Rope	.09	@	.10
Amer. Hemp, 6	.27	@	.29
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.23	@	.28

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	05	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.50	@	5.00
Southern Kraft	3.25	@	—
No. 2 Kraft	3.25	@	—
Wood Tag Boards	.04½	@	.06½
Sulphite Screenings	.03	@	.03¾
Manila Tissue	.07	@	.07¾
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	53.00	@	—
Sheets	58.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.80	@	1.85
No. 1 Hard White	1.65	@	1.70
No. 1 Soft White	1.50	@	1.55
Ledger & Writings	.65	@	.70
Solid Books	.60	@	.65
Blanks	1.20	@	1.25
Krafts	1.00	@	1.10
New Kraft Cuts	1.30	@	1.40
Manila Env. Cuts	1.50	@	1.60
Ex. No. 1 Manila	1.10	@	1.20
Print Manila	.40	@	.45
Overissue News	.45	@	.50
Old Newspapers—			
No. 1	.40	@	.45
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.30	@	.35
No. 2	.20	@	.25
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.09
Manila Sul., No. 1	.03	@	.05
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¼
Southern Kraft No. 1	—	@	.04
Southern Kraft No. 2	—	@	.03¾
Common Bogus	.03	@	.04

(Delivered Philadelphia)

News Print Rolls	58.00	@	62.00
Straw Board	50.00	@	—
News Board	30.00	@	32.00
Chip Board	25.00	@	27.50
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	63.00	@	65.00
Carload lots	62.00	@	67.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.05½	@	.06
New White, No. 2.	.04	@	.04½
Light Silesias	.04	@	.04½
Silesias, No. 1	.04	@	.04½
Black Silesias, soft.	.04	@	—
New Unbleached	.05½	@	.06
Washable, No. 1	.02	@	.02½
Blue Overall	.04	@	.04½
Cottons—According to grades—			
Washable, No. 2	.01½	@	.02
New Blue	.01¾	@	.02
Fancy	.02	@	—
New Black Soft	.02	@	.03
New Light Seconds	.01¾	@	.02
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O.D.	.04½	@	.05
No. 2 Mixed	.03½	@	.04
Corduroy	.02½	@	.03
New Canvas	.06½	@	.07
New Black Mixed.	.02½	@	.03

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	2.50
M. G.	3.50	@	4.00
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1	1.00	@	1.10
Repacked	.70	@	.80

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	—
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.10	@	2.20
No. 2 Hard White.	1.75	@	2.10
No. 1 Soft White.	1.50	@	1.70
No. 2 Soft White.	1.40	@	1.50
No. 1 Mixed	.45	@	.55
No. 2 Mixed	.40	@	.50
Solid Ledger Stock	1.20	@	1.30
Writing Paper	.60	@	.75
No. 1 Books, heavy	.60	@	—
No. 2 Books, light		Nominal	
No. 1 New Manila	1.25	@	1.50
No. 1 Old Manila	1.00	@	1.25
Print Manila	.45	@	—
Container Manila	.35	@	.40
Old Kraft	.90	@	1.00
Common Paper	.20	@	—
No. 1 Mixed Paper	.15	@	.25
Straw Board, Chip	.25	@	.35
Binders Board, Chip	.25	@	.35
Corrugated Board	.25	@	.35
Overissue News	.40	@	.50
Old Newspaper	.30	@	.35

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11½
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05½
No. 2 Kraft	.03¼	@	.03½

(F. o. b. Boston)

Southern Kraft	.03¼	@	.03½

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¾

(Delivered New England points)

News Print, rolls	—	@	52.50
Straw Board, rolls	.009	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	25.00	@	30.00
Chip Board	—	@	25.00
Chip Board (Creasing)	25.00	@	27.50
Single Manila Lined Chip	—	@	35.00
Single White, Patent Coated News Board—			
Bender	45.00	@	55.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.50
No. 2 Hard White	2.25	@	2.50
No. 1 Soft White	1.50	@	1.60
No. 2 Mixed	.50	@	.55
No. 1 Mixed	.75	@	.85
Solid Ledger Books	1.40	@	1.65
Overissue Ledger Stock	1.35	@	1.60
Mixed Ledgers	1.00	@	1.15
No. 1 Books, heavy	.60	@	.70
No. 1 Books, light	—	@	.45
Crumpled Stitchless Book Stock	1.00	@	1.25
Manila Env. Cuttings	1.50	@	1.60
No. 1 Old Manila	.80	@	.90
White Blank News	1.20	@	1.30
Kraft No. 1	.75	@	.85
Manila	.80	@	.90
No. 1 Mixed Paper	.15	@	.17½
Print Manila	.35	@	.40
Overissue News	.35	@	.40
Old Newspapers	.25	@	.30
Box Board, Chip	.17½	@	.20
Corrugated Boxes	.22½	@	.27½
Screening Wrappers	.25	@	.32½

Bagging

(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.15	@	1.25
Domestic	.80	@	.85
Manila Rope—			
Foreign	1.25	@	1.50
Domestic	1.50	@	1.75
Transmission Rope	—	@	.90
Mixed String	—	@	.30
Jute Rope	—	@	.85
Jute Carpet Threads	.40	@	.60
Bleachery Burlap	—	@	2.25
Scrap Burlap	.75	@	.85
No. 1 Scrap Burlap	.80	@	.85
Scrap Sisal	.90	@	1.10
Scrap Sisal for shredding	—	@	1.25
Wool Tares, heavy	.80	@	.90
New Burlap Cutting	.90	@	1.00
Australian Pouches	—	@	1.50
Heavy Baling Bagging	1.25	@	1.30
Paper Mill Bagging	.60	@	.75
Bagging No. 2	—	@	—
No. 1 Burlap	—	@	3.00

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1.	—	@	.05¼
New White No. 2.	—	@	.04
Silesias No. 1	.04½	@	.05
New Black Silesias	.02½	@	.02¾
New Unbleached	.05½	@	—
Fancy	—	@	.03¾
Washable	—	@	.03½
Cottons—According to grades—			
Blue Overalls	—	@	.03
New Black, soft	.04	@	.04¼
Khaki Cuttings	.03	@	.03½
O. D. Khaki	.03	@	.03½
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.25	@	2.50
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	1.00	@	1.25
Thirds and Blues—			
Repacked	—	@	.85
Miscellaneous	.70	@	.75
Black Stockings	2.50	@	2.75
Roofing Stock—			
No. 1	.58	@	.60
No. 2	.48	@	.50
No. 3	.43	@	.48

Foreign Rags

(F. o. b. Boston)

Dark Cottons	—	@	.60
New No. 1 White Shirt Cuttings	5.00	@	5.50
Dutch Blues	—	@	1.80
New Checks & Blues	4.00	@	4.50
Old Fustians	1.10	@	1.15
Old Linsey Garments	.70	@	—

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¼	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.10¾	@	
No. 2 Colored	.09	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (Carloads)	6.65	@	—
No. 3 M. F. (Carloads)	6.20	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.65	@	—
No. 4 S. C. (carloads)	5.70	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.50	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.60	@	—
White Wrap	5.10	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.60	@	—
Fiber	5.60	@	—
Kraft, M. F.	5.98	@	—
Kraft No. 2	5.60	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	36.50	@	57.00
Sheets	61.50	@	—

Pulp

(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	45.00	@	—
Sulphite, news grade	40.00	@	—
Sulphite, bleached	58.00	@	65.00
Sulphate	55.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.50	@	—
Soft White	2.25	@	—
White Blk. News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	—
Light and Crumpled Book Stock.	.80	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	.65	@	—
Kraft	1.75	@	—
News and Scrap—			
Strictly Overissue	.50	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¾

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